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Supreme Court, U.S.
FILED

No. 01 1164 7 MAY - 6 2002

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IN THE

Supreme Court of the United States

VULCAN ENGINEERING CO., INC.,

Petitioner,

v.

FATA ALUMINUM, INC. and FATA GROUP, S.P.A.,

Respondents.

ON PETITION FOR A WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

PETITION FOR A WRIT OF CERTIORARI

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154 pp

QUESTIONS PRESENTED

Whether this Court's long established "but for" rule for recovery of damages in patent infringement cases applies to infringement based on an "offer to sell", as added to 35 U.S.C. § 271 on Dec. 8, 1994, Pub. L. 103-465, HR 5110, S 2467, 108 Stat. 4809, (effective Jan. 1, 1996).

Whether the Federal Circuit's affirmation of the judgment of the trial court that the Patent owner is not entitled to damages for an "offer to sell" as codified in 35 U.S.C. § 271, unless those damages are "quantitatively" and "qualitatively" different from damages for an infringing "sale" is in conflict with existing precedent of the Court, wherein the Court has stated that the statutory measure of "damages" is "the difference between [the patent owner's] pecuniary condition after the infringement, and what his condition would have been if the infringement had not occurred." *Aro Mfg. Co., Inc. v. Convertible Top Replacement Co., Inc.*, 377 U.S. 476, 507 (1964)?

Whether the Federal Circuit's decision that the Patent owner is not entitled to damages from an infringing manufacturer due to a post judgment license from the Patent Owner to the purchaser of the infringing items enabling the purchaser to use the subsequently delivered infringing items, wherein the patent owner preserved its right to damages against the infringing manufacturer as a consequence of prior "offers to sell" the items, is in conflict with existing precedent of the Court, wherein the Court has held "The straightforward rule is that a party releases only those other parties whom he intends to release." In *Zenith Radio Corp. v. Hazeltine Research, Inc.*, 401 U.S. 321, 347 (1971), *reh'g denied*, 401 U.S. 1015 (1971) *citing Aro Mfg. Co., Inc. v. Convertible Top Replacement Co., Inc.*, 377 U.S. 476, 501 (1964)?

STATEMENT PURSUANT TO RULE 29.6

Petitioner, Vulcan Engineering Co., Inc., has no parent corporation and no publicly held company owns 10% or more of its stock.

TABLE OF CONTENTS

	Page
QUESTIONS PRESENTED	i
STATEMENT PURSUANT TO RULE 29.6	ii
TABLE OF CONTENTS	iii
TABLE OF AUTHORITIES	v
TABLE OF APPENDICES	vii
OPINIONS BELOW	1
JURISDICTION	1
CONSTITUTIONAL AND STATUTORY PROVISIONS INVOLVED	1
STATEMENT OF THE CASE	2
REASONS FOR GRANTING OF THE WRIT	8
1. *Certiorari* should be granted to establish that the rules for damages in "offer to sell" infringement are no different than the rules for damages under any other infringement under § 271(a).	8
2. Certiorari should be granted to correct the Federal Circuit's reliance on an unworkable standard of damages rather than this Court's "but for" test.	12

TABLE OF CONTENTS (continued)

Page

3. The Certiorari should be granted because the judgment below undermines this Court's rule regarding the effect of a release or settlement, and exposing patentees to a risk of loss when they attempt to resolve issues short of trial, thereby fostering needless continuation of litigation with the attendant dissipation of judicial and private resources. 15

CONCLUSION 17

TABLE OF AUTHORITIES

Cases: *Page(s)*

Adams v. Burke, 84 U.S. 453 (1873) 8

Aro Mfg. Co. v. Convertible Top Replacement Co., 377 U.S. 476, 141 USPQ 681 (1964) ..... *passim*

Cyrix Corp. v. Intel Corp., 77 F.3d 1381, 37 USPQ2d 1884 (Fed. Cir. 1996) 13, 14

Livesay Window Co. v. Livesay Indus., Inc., 251 F.2d 469, 116 U.S.P.Q. (BNA) 167 (5th Cir. 1958) .. 15

Panduit Corp. v. Stahlin Bros. Fibre Works, Inc., 575 F.2d 1152, 197 USPQ 726 (6th Cir. 1978) .. 10

Yale Lock Mfg. Co. v. Sargent, 117 U.S. 536 (1886) 15

Zenith Radio Corp. v. Hazeltine Research, Inc., 401 U.S. 321 (1971) ..... i, 12

United States Constitution:

Article 1 1

TABLE OF AUTHORITIES (continued)

Page(s)

Statutes:

28 U.S.C. § 1254(1). 1

28 U.S.C. § 1295(1) 1

28 U.S.C. § 1338(a) 1

35 U.S.C. § 271 on Dec. 8, 1994, Pub. L. 103-465, HR 5110, S 2467, 108 Stat. 4809 (effective Jan. 1, 1996) ..... *passim*

35 U.S.C. § 284 ..... 2, 10

Other Authority:

W. PAGE KEETON, ET AL., PROSSER & KEETON ON THE LAW OF TORTS, pp. 241-244 (2d ed. 1955) 13

TABLE OF APPENDICES

Page(s)

OPINION OF THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT DATED AND DECIDED FEBRUARY 5, 2002 ..... 1a

AMENDED OPINION OF THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF MICHIGAN, SOUTHERN DIVISION DATED AND FILED AUGUST 01, 2000 ..... 32a

TELEPHONIC CONFERENCE DATED MAY 9, 2000 ..... 66a

AMENDED OPINION OF THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF MICHIGAN, SOUTHERN DIVISION DATED AUGUST 10, 1999 ..... 72a

OPINIONS BELOW

The majority and dissenting opinions of the Federal Circuit are published at 278 F.3d 1366 and are reproduced in the Appendix at pages 1a-31a. The opinions of the district court are not reported. They are reproduced in the Appendix at pages 32a-128a.

JURISDICTION

The Court has jurisdiction as follows, the Court of Appeals for the Federal Circuit entered its decision on February 5, 2002 affirming the judgment of the Eastern District of Michigan rendered in 98-CV-74495. The statutory basis for the District Court's subject matter jurisdiction was 28 U.S.C. § 1338(a). The Statutory basis for the Court of Appeals' jurisdiction was 28 U.S.C. § 1295(1). This Court has jurisdiction to review the case under 28 U.S.C. § 1254(1).

CONSTITUTIONAL AND STATUTORY PROVISIONS INVOLVED

Article 1, section 8, clause 8 of the Constitution provides:

> The congress shall have power . . . To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.

35 U.S.C. § 271. Infringement of patent.

(a) Except as otherwise provided in this title, whoever, without authority makes, uses, offers to sell, or sells any patented invention, within the

United States or imports into the United States any patented invention during the term of the patent thereof, infringes the patent.

35 U.S.C. § 284. Damages.

Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court.

When the damages are not found by a jury, the court shall assess them. In either event the court may increase the damages up to three times the amount found or assessed. Increased damages under this paragraph shall not apply to provisional rights under section 154(d) of this title.

The court may receive expert testimony as an aid to the determination of damages or of what royalty would be reasonable under the circumstances.

STATEMENT OF THE CASE

This case presents a divergence and uncertainty in patent law brought about by the denigration of this Court's "but for" rule of damages in patent infringement cases. This divergence and uncertainty is specifically addressed to infringement under the "offer to sell" infringement under 35 U.S.C. § 271 as amended in 1994 and effective January 1996. Under this well-established rule, the statutory measure of "damages" is "the difference between [the patent owner's] pecuniary condition after the infringement, and what his condition would have been if the infringement had not

occurred." *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 507 (1964). The rule has been consistently applied by this Court, in numerous cases, and is a frequently recurring issue in patent law and practice. Since the Congressional change to § 271, varying aspects of the meaning and scope of the law relative to the "offer to sell" language have come before the lower courts. In this case, the question presented specifically addresses the measure of damages due a patentee for an infringement under the "offer for sale" prong of § 271 where the patentee loses the sale as a result of the "offer for sale," and releases the infringer's customer from liability but preserves in the release the patentees' rights to recover against the infringer for the "offer to sell."

Vulcan Engineering Company brought suit for infringement of United States Patent No. 4,736,787 ("the '787 patent") against FATA Aluminum, Inc., and FATA Group, S.p.A. (collectively "Fata"). Fata raised various defenses, and filed a counterclaim charging that the '787 patent was invalid. The United States District Court for the Eastern District of Michigan held, after a bench trial, that the '787 patent was valid, enforceable, and infringed, and awarded damages of $2,187,199.00.

Vulcan Engineering had sold General Motors eight lost foam metal casting lines covered by the '787 patent prior to 1997. (A. 200-201, pp. 104-106; A. 1863-1864[1]). The Vulcan product had become the standard in the industry, From January 1, 1987 until March, 1999, Vulcan sold 33 Trufoam systems. During this same period, only 41 lost foam casting production systems were sold worldwide, not counting the infringing lines; giving Vulcan an 80.4% worldwide market share. (A. 200-201, pp. 104-106; A. 1863-1864).

In February 1997, Vulcan and Fata submitted competing bids in response to a solicitation by General Motors Corporation

1. In this brief, A. refers to the appendix for the appeal to the United States Court of Appeals for the Federal Circuit. App. refers to the appendix attached to this petition.

for nine metal casting lines using the lost foam method, meeting certain detailed specifications. Fata's bid was lower, and General Motors awarded the contract to Fata, accepting the offer for line 1 of the nine metal casting lines. Vulcan then wrote to General Motors on August 6, 1997, stating that Vulcan believed that a system meeting the specifications of the bid would necessarily infringe the '787 patent.

On August 12, 1997, General Motors sent Fata a copy of Vulcan's letter, reminding Fata of its contractual indemnification obligation with respect to patent infringement. Fata's offer to sell remained open and General Motors accepted Fata's offer for Lines 2 to 5 of the nine metal casting lines in April, 1998. (A. 563-564, pp. 113-114; A. 486, pp. 211-212). Fata continued to work on producing the lines for General Motors, and Vulcan filed suit against Fata on September 15, 1998.

Line 1 was delivered by Fata to General Motors in November 1998, and lines 2 through 5 were still being produced when the district court announced from the bench on May 21, 1999, that it had decided liability in favor of Vulcan. (A. 486, p. 212, Lines 13-15). On July 28, 1999, before the damages phase, Vulcan and General Motors entered into an agreement in which General Motors awarded the remaining four lines of the nine metal casting lines to Vulcan and in which Vulcan promised not to sue General Motors for its "prior, present and future use, sale, and offer to sell or other disposition" of line 1, which had been completed by Fata and installed at General Motors' Saginaw plant in November 1998. The agreement also granted General Motors a "limited license to have made by FATA, use, sell and offer to sell or otherwise dispose of the four remaining casting lines to be supplied for the Saginaw facility by FATA." (A. 1867 ¶2). The agreement provided that the "license to

GM specifically authorizes FATA to supply to and install these four remaining casting lines at the GM Saginaw facility." Paragraph 4 of the Agreement further provided as follows:

> **4.** This Agreement does not waive, release, compromise or discharge any claim that Vulcan may have against Fata with respect to the first casting line delivered by Fata to the GM Saginaw, Michigan facility or any claim Vulcan may have against Fata for Vulcan failing to obtain the business of supplying the five casting lines for the GM Saginaw facility.

(A. 1867-1868, ¶4)

In the district court, Vulcan sought damages from Fata for lines 1 through 5, stating that 4 preserved Vulcan's right to full damages for infringement. The district court awarded Vulcan its lost profits for line 1, and held that no damages had been proven as to lines 2 through 5.

The district court ruled that Vulcan, by paragraph 4 of its license agreement with General Motors, had reserved a right to damages only for "failing to obtain the business of supplying" lines 2 through 5. (App. 57a). The court declined to view this reservation as entitling Vulcan to full damages from Fata, Vulcan having licensed General Motors "to have made by FATA, use, sell, and offer to sell" the remaining lines to be supplied by Fata. The court held that "failing to obtain the business" related only to Fata's offer of sale, but not its actual sale, which the district court apparently deemed licensed through the General Motors' agreement. The district court held damages for infringement by an "offer to sell" and a "sale" are "qualitatively" and "quantitatively" different. (App. 59a). Thus, the district court held that Vulcan was

required to prove its damages for "failing to obtain the business," by a methodology different than used for line 1, and held that Vulcan "had not proven the amount with any degree of certainty," and awarded none. (App. 59a).

The Court of Appeals, over the dissent of Judge Michel, concluded that Vulcan was not entitled to damages for lines 2 through 5 in view of its license to General Motors stating,

> Vulcan's grant of an express license "to have [lines 2-5] made by FATA" is not consistent with the assertion of damages against Fata for infringement by lines 2 through 5. *Cf. Cyrix Corp. v. Intel Corp.*, 77 F.3d 1381, 1387-88, 37 USPQ2d 1884, 1888-90 (Fed. Cir. 1996) (finding no infringement when licensee acted within scope of its "have made" rights).

(App. 19a).

However, Judge Michel, in his dissent, noted:

> In these circumstances, then, Vulcan correctly asserts that a "but for" test should determine the damages it can recover for an infringing offer for sale, given again that only two suppliers (Vulcan and Fata) competed in the relevant market:
>
> > The question to be asked [is] primarily: had the Infringer not infringed, what would Patent Holder * * * have made? *In determining such damages, the profits lost by the patent owner in a two-supplier market is a proper ground for granting relief. Lost profits may be in the form of diverted*

> *sales, eroded prices, or increased expenses. The* patent holder must establish a causation between his lost profits and the infringement. *A factual basis for the causation is that 'but for' the infringement, the patent owner would have made the sales that the infringer made, charged higher prices, or incurred lower expenses. Lam, Inc. v. Johns-Manville Corp.*, 718 F.2d 1056, 1064-65 (Fed. Cir. 1983) (quoting *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 507 (1964)) citations omitted) (emphasis added).

Applying the "but for" test, therefore, Vulcan would indeed have obtained the GM business: "But for" Fata's four infringing offers, Vulcan — the only party whose patented casting line "read on" to GM's contract specifications — would have received these four contracts to build casting lines 2 – 5. Accordingly, the "offer-to-sell" damages (and the type of evidence needed to show them) here are indeed the same as the damages (and the type of evidence needed to show them) that Vulcan would have received for any other infringing sale, i.e., lost profits resulting from these four lost sales. Again, however, Vulcan received nothing for the loss of these four contracts, in derogation of the principle that damages should make aggrieved parties whole.

(App. 29a - 30a)

REASONS FOR GRANTING OF THE WRIT

Petitioner seeks review because the judgment below (1) ignores this Court's precedential "but for" test for damages in patent infringement as relates to the newly created "offer to sell" context, (2) addresses infringement in the context of the "offer to sell" language added to § 271 in 1994 and requires that damages for such infringement be "qualitatively" and "quantitatively" different from damages flowing from infringement of a sale in the same statute; and, (3) undermines this Court's rule regarding the effect of a release or settlement, thereby exposing patentees to a risk of loss when they attempt to resolve issues short of trial.

1. *Certiorari* should be granted to establish that the rules for damages in "offer to sell" infringement are no different than the rules for damages under any other infringement under § 271(a).

35 U.S.C. § 271(a) provides in pertinent part, . . . whoever, without authority makes, uses, offers to sell, or sells any patented invention, within the United States . . . during the term of the patent thereof, infringes the patent.

In *Adams v. Burke*, 84 U.S. 453, 456 (1873) this Court ruled that "[t]he right to manufacture, the right to sell, and the right to use are each substantive rights, and may be granted or conferred separately by the patentee." There was no indication that Congress intended to change this framework when it added "offers to sell" to the list of infringing activities in § 271(a). There is likewise no indication that Congress intended that damages flowing from an "offer to sell" be quantitatively and qualitatively different from damages flowing from making, using, or selling the patented invention.

The district court held that as of April 1998, FATA's offer to sell the infringing lines was open to General Motors and General Motors accepted the offer at that time. (App. 48a). As Judge Michel correctly pointed out in his dissent:

> "But for" Fata's four infringing offers, Vulcan — the only party whose patented casting line "read on" to GM's contract specifications — would have received these four contracts to build casting lines 2 – 5. Accordingly, the "offer-to-sell" damages (and the type of evidence needed to show them) here are indeed the same as the damages (and the type of evidence needed to show them) that Vulcan would have received for any other infringing sale, *i.e.*, lost profits resulting from these four lost sales. Again, however, Vulcan received nothing for the loss of these four contracts, in derogation of the principle that damages should make aggrieved parties whole.

(App. 30a)

The issue addressed here is a narrow one, yet, it is one that will be addressed by patentees for as long as the newly created "offer to sell" infringement remains in the statute. In the present case, the infringer and the purchaser of the infringing goods, chose not to heed the notice of infringement and relied on their erroneous judgment as to the likelihood of success of the patentee. Given the opportunity to avoid infringement or to buy the product from Vulcan, they respectively chose not to do either. Hence, the offers for sale remained open until April 1998 when General Motors accepted the offers. (A. 563-564). If Fata had withdrawn its offers, prior to that acceptance, Vulcan could have supplied the goods on the same schedule as Fata eventually did.

As shown by the damage award for line 1, the goods in question are multimillion dollar casting systems, which require substantial lead time to supply. In June of 1999, the district court determined infringement, and only thereafter did General Motors seek to obtain clearance from the Patent Owner for delivery of the infringing lines. By then, due to the passage of time, General Motors did not feel that Vulcan had the capability to supply the lines to GM within the schedule parameters and Fata had continued to manufacture on the strength of the purchase orders during the litigation, and thus, was able to supply the lines within the schedule parameters.

But for the offers for sale, Fata stood in the place Vulcan should have stood. There was no speculation as the factors of (1) demand for the product, (2) the possible substitution of other products, (3) Vulcan's manufacturing and marketing capability to fulfill the demand, and (4) the amount of profit Vulcan would have made on the sales lost due to the infringement. *See Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1156, 197 USPQ 726, 729-30 (6th Cir. 1978). The district court, however, required some different methodology by which Vulcan was to calculate these "quantitative" and "qualitatively" different damages. (App. 59a). Yet, there is no guidance in the law for such measure when the entire profit is lost because the infringing product was offered for sale to Vulcan's long time customer. Hence, the Federal Circuit and District Court departed from the standard for damages under the "offer to sell" form of infringement statutorily required under 35 U.S.C. § 284 as applied consistently to each of the "make, use, or sell" forms of infringement, yet gave no guidance at how a qualitatively and quantitatively different damage analysis is to be made.

It is impossible to reconcile the failure to provide any damages for lines 2 through 5 with the potential award of price erosion damages on line one. Vulcan is to be made whole as to the price erosion on the business it lost in the face of competing offers to sell the infringing equipment, but is denied any damages on the business it failed to get due to the offers to sell by Fata. Indeed, by agreement, GM is free to use line 1, and Vulcan is entitled to damages from FATA. But, because the District Court and the Federal Circuit treated infringement under the "offer to sell" prong differently than infringement under the other prongs, no damages were awarded to Vulcan for lines 2 through 5, which were awarded to GM on the same contractual terms, and with commensurate damage to Vulcan as to line 1.

The statutory measure of damages since the revision of the Patent Statute in 1952 has been based solely on the losses provable by the Patent Owner. There is no justification in the statute other than whether the Patent Owner has been fully compensated for the infringement.

In contrast, under the decision of the Federal Circuit, without direction from Congress, infringements by "offer to sell" will lead to damage to holders of United States Patents without a remedy for the infringement in contravention of the clear language of the statute. Therefore, Certiorari should be granted to establish that the rules for damages in "offer to sell" infringement are no different than the rules for damages under any other infringement under § 271(a).

2. Certiorari should be granted to correct the Federal Circuit's reliance on an unworkable standard of damages rather than this Court's "but for" test.

"The straightforward rule is that a party releases only those other parties whom he intends to release." *Zenith Radio Corp. v. Hazeltine Research, Inc.*, 401 U.S. 321, 347 (1971), *reh'g denied*, 401 U.S. 1015 (1971) *citing Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 501, 141 USPQ 681, 694 (1964).[2]

The Federal Circuit's decision below is in direct conflict with the above rule as stated by this Court. Only, this Court and the Federal Circuit will ever hear appeals from decisions

2. In *Zenith*, this Court addressed the effect of releases on joint tortfeasors noting that three rules have emerged. The first rule is the ancient common law rule that the release of one joint tortfeasor releases all tortfeasors regardless of the intent of the parties. This Court noted that this rule is not applied to a statutory cause of action created under federal law. The second rule, which is the rule adopted by the Restatement, is that if a party releases one coconspirator but expressly reserves the rights against others, then the other coconspirators are not released. The final rule, which this Court adopted in *Aro*, a patent infringement case, provides that the effect of a release upon coconspirators shall be determined in accordance with the intention of the parties.

> . . . We must keep in mind the multistate and multiparty character of much private antitrust litigation; often, defendants who have conspired together must be sued in a number of different States if all are to be reached, and, while defendants in some States may be willing to enter into settlements, defendants in others may not. To adopt the ancient common-law rule would frustrate such partial settlements, and thereby promote litigation, while adoption of the First Restatement rule would create a trap for unwary plaintiffs' attorneys.

Zenith Radio, 401 U.S. at 343-347.

of the lower courts on the issue of damages relative to patent cases and the review of the effect of settlements on those cases. The Federal Circuit has chosen as its precedent in such releases and settlements its own case of *Cyrix Corp. v. Intel Corp.*, 77 F.3d 1381, 1387-88, 37 USPQ2d 1884, 1888-90 (Fed. Cir. 1996) and in so doing disregarded the public policy and principles underpinning this Court's rule.

In *Aro,* this Court held:

> In *Birdsell v. Shaliol, supra* 112 U.S., at 489, the Court applied to a patent case the proposition that "By our law, judgment against one joint trespasser, without full satisfaction, is no bar to a suit against another for the same trespass." What is true of a judgment is true of a release. *See Prosser, supra,* at 241-244. A release given a direct infringer in respect of past infringement, which clearly intends to save the releasor's rights against a past contributory infringer, does not automatically surrender those rights. Thus the District Court was correct in denying that "defendants are entitled to the fortuitous benefit of the old joint tort-feasor rule." The mere fact that the agreement released Ford and Ford's customers for their past infringement does not negate Aro's liability for its past infringement.

377 U.S. 476, 501

The Federal Circuit erred in treating the Vulcan – GM agreement as a pre-existing license, rather than a release of a party who could have been named as an infringer for use of the infringing system or systems. (App. 19a). The difference goes to the heart of the issue of compensation for the exercise of the Patent Owners exclusive rights. In a preexisting license,

such as in *Cyrix*, the Patent Owner granted the rights under § 271 to the licensee, who thereafter, exercised his rights to make or have made. In exchange for these rights, the licensee had paid full compensation, and no clause sought to preserve the licensees' rights against any third party. In such circumstances, the Patent Owner is deemed to have been fully compensated for the licensed exercise of the exclusive rights of the Patent Owner.

In the post infringement context, however, the issue is different. Because of their prior course of conduct, one or more entities are involved in activities that will render each of them liable for infringement. Under the rule stated by this Court, the Patent Owner can release or agree with either of them, both of them, or neither of them in determining how to resolve the issue of infringement and facilitate commerce. Where damage has already been occasioned by the conduct of one of the entities, the Patent Owner is entitled to reach accord with the other and pursue his remedy against the one considered to have occasioned the damage. In the present case, the "offer to sell" prevented Vulcan from getting the business of lines 2 to 5. In its agreement with GM, Vulcan expressly reserved its right to seek compensation from FATA for this very act of infringement. It is clear from the agreement that Vulcan received no compensation for the damage caused to its business by the "offer to sell" and FATA, the only entity guilty of infringement by virtue of the "offer to sell," was not a party to the accord. (A. 1867).

Accordingly, the Federal Circuit's decision has departed from the rule that entitles Vulcan to full satisfaction and compensation for its injury and has improperly cast the Vulcan GM agreement as a license under which Vulcan received full compensation. The rule espoused by the Federal Circuit permits the purchaser/customer and the infringer to disregard the rights of the patent owner and allow the

purchaser to use his economic power to drive a bargain between himself and the Patent Owner, which will be interpreted to release the infringer even though such was not the intent of the parties to the bargain. Such a rule gives larger corporate entities an unfair position relative to patents and diminishes the rights of smaller entities to enforce their patents and receive just compensation.

Accordingly, certiorari should be granted to reaffirm the rule that a party releases only those other parties whom he intends to release and correct the Federal Circuit's reliance on improper precedent.

3. The Certiorari should be granted because the judgment below undermines this Court's rule regarding the effect of a release or settlement, and exposing patentees to a risk of loss when they attempt to resolve issues short of trial, thereby fostering needless continuation of litigation with the attendant dissipation of judicial and private resources.

In Aro Manufacturing, this Court stated that the statutory measure of "damages" is "the difference between [the patent owner's] pecuniary condition after the infringement, and what his condition would have been if the infringement had not occurred." *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 507 (1964) (plurality opinion), *quoting Yale Lock Mfg. Co. v. Sargent*, 117 U.S. 536, 552 (1886). The determinative question, this Court stated, is: "had the Infringer not infringed, what would the Patent Holder-Licensee have made?" *Aro*, 377 U.S. at 507 (*quoting Livesay Window Co. v. Livesay Indus., Inc.*, 251 F.2d 469, 471, 116 U.S.P.Q. (BNA) 167, 168 (5th Cir. 1958)). The "but for" inquiry therefore requires a reconstruction of the market, as it would have developed absent the infringing product, to determine what the patentee "would . . . have made."

Neither the district court nor the Federal Circuit, applied the "but for" test, nor did they determine how the market would have developed absent the infringing product. Rather, they concluded that the "offer to sell" infringement in and of itself cannot sustain "but for" damages. Judge Michel in his dissent, recognized this error noting, that the Federal Circuit had previously recognized the ongoing validity of the test for the measure of damages. (App. 29a – 30a).

In departing from the "but for" test, the Federal Circuit leaves the Patent Owners at a loss for a remedy. In a market where only the Patent Owner and the infringer have offered a product, how can a loss of business due to an on going offer of sale be quantitatively different to the Patent Owner? He has lost the whole of the revenue to be derived from exploiting his patent, whereas the infringer has its profits and the customer has the patented subject matter. The quantity of the damage is equal, in that the Patent Owner has lost the business that other wise would have come to him and has lost the same profit from that business. It is quantifiably different for the customer and the infringer, who were respectively able to drive a better bargain for the price of the patented subject matter and to reap a profit from the infringement, but such is not in accordance with the "but for" standard of this Court.

In such a market, how can the loss of business be qualitatively different to the Patent Owner? He has not been compensated for his lost revenue, but the infringer has been allowed to profit from the infringement. Here, the qualitative difference is one of basic unfairness in result. While the infringer is not to be punished for his infringement, using any standard other than the "but for" standard, which restores the Patent Owner to the position he would have enjoyed "but for" the offer to sell, forces upon the Patent Owner the bitterest of Hobson's choices. He must either seek an

injunction against delivery of the infringers product to the Patent Owner's best customer, thereby depriving that customer of the means to advance its technology and placing it in a position to lose months or years of production of a planned product enhancement, in hopes that the customer will then turn to Patent Owner, or he must allow the customer to accept delivery of the infringing product with no compensation to the Patent Owner. The damages are not a matter of what words were put into the agreement with the customer. The damages are "had the Infringer not infringed, what would Patent Holder * * * have made?" (App. 30a).

CONCLUSION

Therefore, certiorari should be granted to correct the erroneous standard espoused by the Federal Circuit and District Court, and to reestablish the "but for" standard of this Court, to place the patent owner in the same position he would have been in had no infringement occurred. Certiorari should also be granted to reaffirm this Court's rule that a party releases only those other parties whom he intends to release.

Respectfully submitted,

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APPENDIX

OPINION OF THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT DATED AND DECIDED FEBRUARY 5, 2002

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

00-1533, -1553

VULCAN ENGINEERING CO., INC.,

Plaintiff-Cross Appellant,

v.

FATA ALUMINIUM, INC., and FATA GROUP, S.p.A.,

Defendants-Appellants.

DECIDED: February 5, 2002

Before NEWMAN, MICHEL, and LOURIE, *Circuit Judges*.

Opinion for the court filed by *Circuit Judge* NEWMAN. Opinion dissenting in part filed by *Circuit Judge* MICHEL.

NEWMAN, *Circuit Judge*.

Vulcan Engineering Company brought suit for infringement of United States Patent No. 4,736,787 ("the '787 patent") against FATA Aluminum, Inc., and FATA Group, S.p.A. (collectively "Fata"). Fata raised

various defenses, and filed a counterclaim charging that the '787 patent is invalid. The United States District Court for the Eastern District of Michigan held, after a bench trial, that the '787 patent was valid, enforceable, and infringed, and awarded damages of $2,187,199.[1] Both sides appeal aspects of the judgment. The judgment is affirmed, with modification of the damages award. We remand for accounting of modified damages.

BACKGROUND

The '787 patent, issued on April 12, 1988, relates to an on-line continuous system for the production of cast metal shapes using the "lost foam" process. The traditional method of casting of metal articles involves four general steps: (1) forming a mold by compacting the mold material around a model in the shape of the desired article; (2) cutting the mold open to remove the model and then resealing the mold; (3) pouring molten metal into the mold and allowing it to cool; and (4) breaking or cutting the mold to recover the cast metal article. Lost foam casting, first described in 1958, was a significant advance in that step (2) is entirely eliminated. Instead, a polystyrene foam model of the desired article is used to form the mold, and is not removed from the mold; then when molten metal is poured into the mold, the polystyrene foam is burnt out as the metal replaces the foam model.

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1. *Vulcan Engineering Co. v. Fata Aluminium, Inc.*, No. 98-74495 (E.D. Mich. Aug. 10, 1999) (validity and infringement); (Oct. 22, 1999) (denying new trial); (Aug. 1, 2000) (accounting).

Lost foam casting was practiced before the '787 invention, but the process was not automated and the steps were labor-intensive and entailed high production costs. It was believed that continuous automated procedures were not suitable, and none was available until Vulcan's development of the process that is the subject of the '787 patent. It is illustrated in patent Figure 1, which shows, *inter alia,* interconnected gondolas **19** moving through stations that perform the steps of loading and compaction **12**, pouring of the molten metal **13**, and mold unloading **14**.

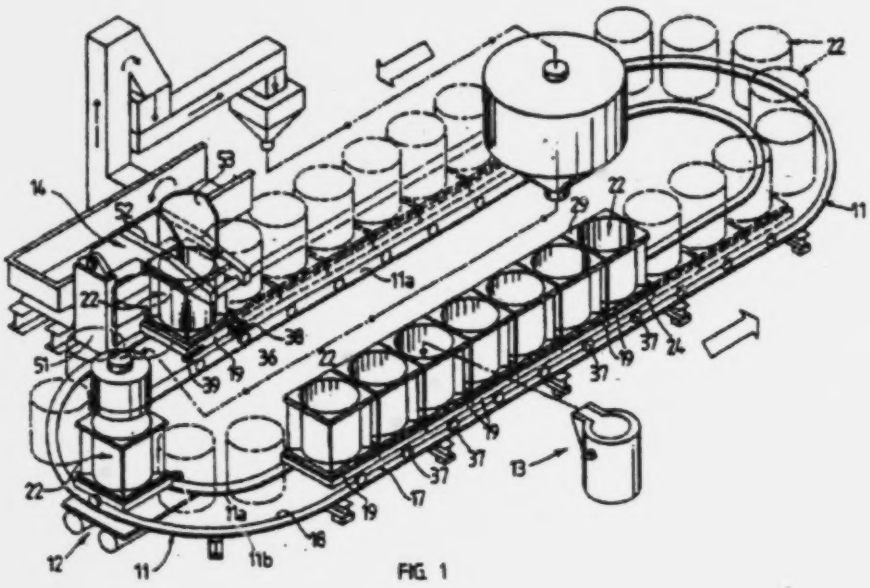


FIG. 1

Claim 1 is the broadest claim:

> **1.** In a lost foam casting system, a closed curvilinear track means having a loading and compaction station, a metal pouring station and a mold unloading system;

> a plurality of flask carrying gondolas supported for movement along the track means with each gondola including means for registering said flask thereon for alignment in said compaction station, and with each of said gondolas being pivotally connected to each adjacent gondola;
>
> drive means for effecting intermittent movement of the mold carriers between indexed positions along said track means;
>
> and a plurality of mold forming flasks adapted for registry in said gondolas and detachably supported thereon.

The Vulcan system was reported with acclaim in trade publications.

In February 1997 Vulcan and Fata submitted competing bids in response to a solicitation by General Motors Corporation for nine metal casting lines by the lost foam method, meeting certain detailed specifications. Fata's bid was lower, and General Motors awarded the contract to Fata. Vulcan then wrote to General Motors on August 6, 1997, stating that Vulcan believed that a system meeting the specifications of the bid would necessarily infringe the '787 patent. On August 12, 1997, General Motors sent Fata a copy of Vulcan's letter, reminding Fata of its contractual indemnification obligation with respect to patent infringement. Fata continued to work on producing the lines for General Motors, and Vulcan filed suit against Fata on September 15, 1998. Line 1 was

delivered by Fata to General Motors in November 1998, and lines 2 through 5 were still being produced when in May 1999 the district court announced its decision that the '787 patent was valid and infringed. Following certain license arrangements between Vulcan and General Motors, damages were assessed. Both sides appeal.

I

VALIDITY

Fata challenged the validity of the '787 patent on several grounds.

Obviousness

Invalidity on the ground of obviousness is a question of law based on underlying factual findings. *See Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966). The district court's findings of fact are reviewed for clear error, and its statements of law and application of the law to the found facts are reviewed for correctness. *See Glaverbel Societe Anonyme v. Northlake Mktg. & Supply, Inc.*, 45 F.3d 1550, 1555, 33 USPQ2d 1496, 1499 (Fed. Cir. 1995). A factual finding is deemed clearly erroneous when "although there is evidence to support it, the reviewing court on the entire evidence is left with the definite and firm conviction that a mistake has been committed." *United States v. United States Gypsum Co.*, 333 U.S. 364, 395, 76 USPQ 430, 443 (1948).

The district court, reviewing the evidence, found that the engineering consensus before appearance of the '787 invention was that lost foam processes having all stations on-line can not be operated as a continuously linked system. The metal casting systems cited by Fata to support its contention of obviousness were "accumulating" systems that did not operate continuously, or on-line green sand metal casting systems; no reference showed or suggested how to modify these systems for continuous lost foam casting.

The district court found that there was no teaching, suggestion, or reason in the prior art to select aspects of the prior art and combine them in the manner of the '787 system. *See Karsten Mfg. Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1385, 58 USPQ2d 1286, 1293 (Fed. Cir. 2001) ("In holding an invention obvious in view of a combination of references, there must be some suggestion, motivation, or teaching in the prior art that would have led a person of ordinary skill in the art to select the references and combine them in the way that would produce the claimed invention."); *C.R. Bard, Inc. v. M3 Sys., Inc.*, 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998) (a showing of a suggestion, teaching, or motivation to combine the prior art references is an "essential evidentiary component of an obviousness holding").

Fata states that the district court erroneously ruled that the turntable system at General Motors' Rochester Products facility was not prior art to the Vulcan system. The Rochester Products system was intended to be a continuous on-line lost foam casting system, wherein a large turntable carried flasks to three operating stations

by indexed movement. It was designed by an employee at the Rochester Products facility, built by a company hired for the purpose, and dismantled as inoperable soon after it was built. The court found that the Rochester Products system was "secret" and that it was not on sale or publicly known or used, and correctly held that it was not prior art. *See* 35 U.S.C. § 102 (stating the statutory sources of prior art). However, exercising prudence, the district court considered the effect that the Rochester Products system would have had on the validity of the '787 patent if it were deemed to be prior art. The court found that the Rochester Products system did not have pivotally-mounted gondolas and did not have a track, and that "nothing in Rochester Products suggests or teaches the invention claimed in the '787 patent or in combination with other cited art."

The district court gave weight to the commercial success of the Vulcan '787 system. *See Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1391, 7 USPQ2d 1222, 1225 (Fed. Cir. 1988) ("The commercial response to an invention is significant to determinations of obviousness, and is entitled to fair weight.") The record shows contemporaneous recognition of the achievements of the Vulcan system, including articles in trade journals and testimony of witnesses concerning the belief in the engineering community that the lost foam process could not be effectively mechanized as a continuous on-line process. Appreciation by contemporaries skilled in the field of the invention is a useful indicator of whether the invention would have been obvious to such persons at the time it was made. *See Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538, 218 USPQ 871, 879 (Fed. Cir. 1983) ("evidence of secondary considerations may

often be the most probative and cogent evidence in the record").

Other Grounds

The district court also rejected Fata's claim that the '787 patent is invalid for anticipation, observing that Fata had introduced no single piece of prior art showing, or purporting to show, all elements of the claims. *See Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989) (an anticipating reference must describe all claimed aspects of the invention). The court also rejected Fata's claim that the '787 patent is invalid for lack of enablement. These rulings have not been appealed. The district court commented on Fata's scatter-shot arguments for invalidity with the observation that this case is "too important . . . for throw-away and truncated arguments."

We do not discern reversible error in the district court's findings and conclusions, and affirm the ruling that the patent is not invalid.

II

INFRINGEMENT

Analysis of patent infringement proceeds in two stages. First, if there is a dispute as to the scope or meaning of a claim or any aspect thereof, the court will resolve the issue as a matter of law. Second, it is

determined whether the accused product or system is within the scope of the claim, a question of fact. *See Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 46 USPQ2d 1169 (Fed. Cir. 1998) (*en banc*).

Claim 1, *supra*, includes several limitations in functional terms, stated in the "means" form authorized by 35 U.S.C. § 112 ¶6. The scope of three "means" terms was at issue: (1) the "closed curvilinear track means," (2) the "means for registering said flask thereon [on the gondola] for alignment," and (3) the "drive means for effecting intermittent movement of the mold carriers between indexed positions along said track means." Fata conceded that these claimed functions were performed in its system, but argued that the corresponding structures were not equivalent. The district court, comparing the structures described in the '787 patent with the structures of the Fata system, found structural identity or structural equivalence as to all three functional elements.

Functional terms written in "means" form are "construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." 35 U.S.C. § 112 ¶6. Infringement is found literally if the claimed function is performed by either the structure described in the patent or an equivalent of that structure. *Texas Instruments Inc. v. United States Int'l Trade Comm'n*, 805 F.2d 1558, 1562, 231 USPQ 833, 834-35 (Fed. Cir. 1986). Thus construction of "means" claim terms requires review of not only the function, but also the structure by which it is performed. *Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc.*, 145 F.3d 1303, 1308, 46 USPQ2d 1752, 1756 (Fed. Cir. 1998)

("a determination of corresponding structure is a determination of the meaning of the 'means' term in the claim and is thus also a matter of claim construction").

1.

The district court found that the "closed curvilinear track means" provides a closed loop on which the gondolas ride through the operating stations, and that the corresponding structure in the '787 patent is a closed curvilinear pair of rails. Fata's system has a closed loop curvilinear pair of rails on which the gondolas ride. The Fata system also has an inner track to prevent lateral movement of the gondolas. The district court found that the presence of an additional track, having a different purpose and function, does not negate the presence of an identical track for the identical purpose. Fata does not appeal the court's findings with respect to this element.

2.

The "means for registering said flask thereon for alignment" fits the flask to the gondola, thereby bringing the flask into alignment with the compaction station. The district court found that the corresponding structure described in the '787 specification is a receptacle on the gondola and two posts on the flask, wherein the posts fit into the receptacle. Fata's system also has a receptacle and two posts that fit into the receptacle and thereby align the gondola with the compaction station; however, Fata places the receptacle on the flask and the two posts on the gondola. The district court found that these differences are insubstantial, and that the structures are equivalent.

Fata argues that the district court erred in finding these differences to be insubstantial. Fata states that the registration means in the '787 patent consists of an alignment plate on the gondola with cutout holes, whereas in the Fata system there are simply circular holes on the flask. Vulcan presented expert testimony that it does not matter, from a mechanical or engineering standpoint, whether the posts and receptacles are located on the gondola or on the flask, and that anyone of ordinary skill would know to interchange the posts and the receptacles for the posts, to perform the same function of alignment. Known interchangeability is an important factor in determining equivalence. *See Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 36, 41 USPQ2d 1865, 1874 (1997). The district court's finding that these structures are equivalent is not clearly erroneous, and is affirmed.

Fata also argues that the district court erred in its construction of the "registration" means because the court did not attribute two functions to the means shown in the patent. Fata states that the '787 registration means serves the dual functions of registering or locating the flask on the gondola and aligning the posts of the flask with the compactor pedestals through which vibration for compaction is transferred. Fata states that in its system both of these functions are not performed by its receptacle and post structure, and that infringement is thereby avoided. Fata does not dispute that the registration function is identically performed in its system. Vulcan responds that the '787 registration means is claimed for the function of aligning the flask on the gondola, and that any additional benefit does not diminish the claimed function.

It is irrelevant whether an element has capabilities in addition to that stated in the claim. When the claimed function is performed in the accused system, by the same or equivalent structure, infringement of that claim element is established. *See Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 945, 15 USPQ2d 1321, 1332 (Fed. Cir. 1990) (infringement is not avoided "if a claimed feature performs not only as shown in the patent, but also performs an additional function"). The district court correctly construed the registration means.

Fata also argues that Vulcan redefined its invention for litigation purposes in a manner that conflicts with the patent's prosecution history, pointing to Vulcan's amendment to claim 14 where the text was changed from "each gondola supporting one of said flask in proper cooperative alignment with said operating stations" to "each gondola including means for registering one of said flask in proper cooperative alignment with said operating stations." The reason for the amendment is not clear on the prosecution record. However, it has not been shown that this amendment altered the meaning of claim 14, or changed the meaning of claim 1. The district court's interpretation of claim 1 is consistent with the examiner's interpretation on reexamination that: "The inclusion of means for registering in each gondola for alignment [of] each flask in the compacting (or mold forming) station limits the claimed system to a non-accumulating, on-line casting system." We do not discern any conflict between the district court's view of the '787 invention and the prosecution history.

Third, Fata contends that the district court erred in its application of the "drive means" to Fata's drive system. Claim 1 describes the drive means as serving the function of "effecting intermittent movement of the mold carriers between indexed positions along said track means."

The district court made a detailed comparison and analysis of the corresponding structures. The court found that both the '787 system and the Fata system have a drive means that includes a hydraulically driven carriage, called a Geneva movement. The '787 specification shows the drive means as including a latch and stop gripper to engage the gondola, while Fata uses front and back levers to grip and engage the gondola. In addition, the '787 drive shows, and Fata uses, a plurality of limit switches and a programmable controller in the drive means. The court found that the structures shown in the '787 patent and those of the Fata system were the same or equivalent, in that the only difference was Fata's use of a gripper with front and back levers instead of a latch and stop. Fata disputes the conclusion that this difference is insubstantial. At the trial witnesses testified that the two levers combine the basic features of a latch and stop, are interchangeable, and operate in the same way. The district court's finding that this is not a substantial difference is not clearly erroneous, and is affirmed.

Fata states that its drive system has features in addition to those shown in the '787 patent, pointing out that in addition to a shock absorbing stop as shown in the '787 patent, Fata uses an electronic valve that slows the carriage to a controlled stop. Also, Fata states that its

gripper permits reversal of the direction of the gondolas, and that Fata also includes another gripper that serves to stabilize the gondolas. The district court correctly pointed out that when all of the claimed features are present in the accused system, the use of additional features does not avoid infringement. *See Northern Telecom*, 908 F.2d at 945, 15 USPQ2d at 1332 ("The addition of features does not avoid infringement, if all the elements of the patent claims have been adopted."); *Texas Instruments*, 805 F.2d at 1568, 231 USPQ at 839 ("As a matter of law, subsequent improvements do not in themselves preclude a finding of infringement.")

4.

Fata also argues that the district court attributed excessive scope to the claims, and points to the following statement in the court's opinion as showing this error: "The infringement analysis is based on the scope of the claim-in-issue as a measure of the invention and is not confined to the particular mode of use or preferred embodiment described in the specification." We discern no error in the district court's statement of the law. This court has often explained that the claims are construed in light of the specification, and are not limited to a designated "preferred embodiment" unless that embodiment is in fact the entire invention presented by the patentee. *See Texas Instruments*, 805 F.2d at 1563, 231 USPQ at 835 ("This court has cautioned against limiting the claimed invention to preferred embodiments or specific examples in the specification.") When the claims include means-plus-function terms in accordance with § 112 ¶ 6, claim scope necessarily is not limited to the preferred embodiments, but includes equivalents

thereof. The district court correctly stated, and applied, the law of claim construction.

Conclusion

The district court's claim construction is confirmed. On this construction the court's finding of infringement is not clearly erroneous, as has been discussed in connection with the claim construction, and is affirmed.

III

DAMAGES

The district court's determination of the amount of damages is a question of fact that is reviewed for clear error, while the method used by a district court in reaching that determination is reviewed for an abuse of discretion. *Cybor*, 138 F.3d at 1461, 46 USPQ2d at 1179. The patentee bears the burden of proving its damages by a preponderance of the evidence. *See Hebert v. Lisle Corp.*, 99 F.3d 1109, 1119, 40 USPQ2d 1611, 1618 (Fed. Cir. 1996).

The district court announced from the bench on May 21, 1999, that it had decided liability in favor of Vulcan. On July 28, 1999, before the damages phase, Vulcan and General Motors entered into an agreement in which Vulcan promised not to sue General Motors for its "prior, present and future use, sale, and offer to sell or other disposition" of line 1, which had been completed by Fata and installed at General Motors' Saginaw plant in

November 1998. The agreement also granted General Motors a "limited license to have made by FATA, use, sell and offer to sell or otherwise dispose of the four remaining casting lines to be supplied for the Saginaw facility by FATA." The agreement provided that the "license to GM specifically authorizes FATA to supply to and install these four remaining casting lines at the GM Saginaw facility." Paragraph 4 of the Agreement further provided as follows:

> **4.** This Agreement does not waive, release, compromise or discharge any claim that Vulcan may have against Fata with respect to the first casting line delivered by Fata to the GM Saginaw, Michigan facility or any claim Vulcan may have against Fata for Vulcan failing to obtain the business of supplying the five casting lines for the GM Saginaw facility.

In the district court Vulcan sought damages from Fata for lines 1 through 5, stating that ¶4 preserved Vulcan's right to full damages for infringement. The district court awarded Vulcan its lost profits for line 1, and held that no damages had been proven as to lines 2 through 5.

Line 1 Damages

For line 1, Fata does not appeal the award of lost profits as measured by the district court. Vulcan states that the accounting of lost profits should have taken account of the price erosion whereby Vulcan was obliged to lower its bid in view of Fata's infringing bid. The district court calculated Vulcan's lost profits from

Vulcan's reduced bid, explaining that Vulcan did not know that Fata had offered an infringing system at the time that Vulcan presented its bid.

For price erosion damages the patentee must show that, but for the infringement, it would have been able to charge and receive a higher price. *See Lam, Inc. v. Johns-Manville Corp.*, 718 F.2d 1056, 1065, 219 USPQ 670, 675 (Fed. Cir. 1983). It is not required that the patentee knew that the competing system infringed the patent, if the patentee reduced its price to meet the infringer's competition. *Brooktree Corp. v. Advanced Micro Devices, Inc.*, 977 F.2d 1555, 1580, 24 USPQ2d 1401, 1419 (Fed. Cir. 1992) (price erosion losses, when reasonably related to the infringing activity, may accrue before the infringement has been verified or proved in court). *See generally Kalman v. Berlyn Corp.*, 914 F.2d 1473, 1485, 16 USPQ2d 1093, 1102 (Fed. Cir. 1990); *Lam*, 718 F.2d at 1067, 219 USPQ at 676. Thus price erosion damages do not require that Vulcan knew, at the time of its bid, that Fata's competing bid was for an infringing system. However, Vulcan must establish the amount of price reduction, and that the price was reduced in response to the competing bid. The district court made no findings on these aspects.[2] We remand for determination of

2. The dissent, while agreeing that it would be impermissible for the district court to have required Vulcan to show that it knew Fata offered an infringing system to establish price erosion damages, contests whether the district court made findings that would preclude the award of such damages on remand. The district court found that "There is no evidence in the record to support Stewart's assumption that Vulcan computed its bid in response to Fata's . . . bid for an infringing system," holding that such evidence is necessary to support a claim for price erosion. There was however evidence that Vulcan

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whether Vulcan established facts supporting its position that but for the infringement it would have obtained a higher price, and if so, the reassessment of damages for line 1.

Lines 2 through 5

The district court held that Vulcan's license agreement with General Motors bars Vulcan from obtaining damages based on lost profits or a royalty arising from Fata's sale of lines 2 through 5. The court held that Vulcan's reserved right to damages for "failing to obtain the business" led to no award because such damages had not been proved with sufficient certainty. Thus although the court found that Fata's bids for lines 2 through 5 constituted infringing offers of sale during the period before Vulcan's license to General Motors, no damages were proven. Vulcan argues that damages for lines 2 through 5 should be

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(Cont'd)
computed its bid in response to Fata's competition. For example, Bruce McMellon, president of Vulcan, testified:

> Between March and July 1997 Vulcan learned that Fata was a serious competitor for the lost foam casting lines. Because of this competition, Vulcan lowered its markup for the July 1997 rebid to General Motors below the markup included in the March 1997 bid and below the level which would have allowed Vulcan to realize the profit margin in the Massena bids which GM had accepted. . . . Without the competition from Fata, Vulcan would not have lowered its price to General Motors below a price which would have allowed Vulcan to realize the accepted Massena bid profit margin.

The fact of price erosion does not depend on whether Vulcan knew, at the time, that the Fata system was infringing.

determined in the same way as for line 1; that is, Vulcan's lost profits on these infringing sales.

The district court ruled that Vulcan, by paragraph 4 of its license agreement with General Motors, had reserved a right to damages only for "failing to obtain the business of supplying" lines 2 through 5. The court declined to view this reservation as entitling Vulcan to full damages from Fata, Vulcan having licensed General Motors "to have made by FATA, use, sell, and offer to sell" the remaining lines to be supplied by Fata. The court held that "failing to obtain the business" related only to Fata's offer of sale, but not its actual sale, which the district court apparently deemed licensed through the General Motors' agreement. Thus the district court held that Vulcan was required to prove its damages for "failing to obtain the business," held that Vulcan "had not proven the amount with any degree of certainty," and awarded none.

We conclude that Vulcan was not entitled to damages for lines 2 through 5 in view of its license to General Motors. Vulcan's grant of an express license "to have [lines 2-5] made by FATA" is not consistent with the assertion of damages against Fata for infringement by lines 2 through 5. *Cf. Cyrix Corp. v. Intel Corp.*, 77 F.3d 1381, 1387-88, 37 USPQ2d 1884, 1888-90 (Fed. Cir. 1996) (finding no infringement when licensee acted within scope of its "have made" rights). On this ground, we affirm the district court's decision to award no damages for lines 2 through 5.

Enhanced Damages

Vulcan appeals the district court's finding that Fata's infringement was not "willful" and thus not subject to enhancement of the damages award. Willfulness is a question of fact, and is reviewed under the clearly erroneous standard. *See Rite-Hite Corp. v. Kelley Co., Inc.*, 819 F.2d 1120, 1126, 2 USPQ2d 1915, 1919 (Fed. Cir. 1987).

The rules of patent infringement are rules of business ethics, and require prudent commercial actions in accordance with law. *See SRI Int'l, Inc. v. Advanced Tech. Labs., Inc.*, 127 F.3d 1462, 1465, 44 USPQ2d 1422, 1424 (Fed. Cir. 1997). 35 U.S.C. § 284 provides remedy to the patentee when these standards are not met, up to three times the amount of found or assessed damages.

The tort of willful infringement arises upon deliberate disregard for the property rights of the patentee. Thus the focus is generally on whether the infringer exercised due care to avoid infringement, usually by seeking the advice of competent and objective counsel, and receiving exculpatory advice. When it is found that the infringer acted without a reasonable belief that its actions would avoid infringement, the patentee has established willful infringement, which may be accompanied by enhanced damages. *See Crystal Semiconductor Corp. v. Tritech Microelectronics Int'l, Inc.*, 246 F.3d 1336, 1346, 57 USPQ2d 1953, 1957 (Fed. Cir. 2001). Such entitlement is not absolute, however, and reasonable discretion reposes in the district court, on consideration of all of the circumstances. *See SRI*, 127 F.3d at 1468-69, 44 USPQ2d at 1427.

The district court found that Fata met its duty to exercise due care by seeking legal advice from a reputable law firm in the United States after receiving notice of possible infringement by way of General Motors on or about August 13, 1997. The court found that Fata relied in good faith on the attorney's advice that the '787 patent was either invalid or did not cover the system proposed by Fata, based on written opinions received on September 12, 1997 and December 18, 1997. Vulcan argues that Fata had already submitted its infringing offer to General Motors before it sought the advice of United States counsel, and that evidence at trial showed that Fata had knowledge of the '787 patent as early as 1993, and that there was a communication between company executives before Fata submitted its bid. Thus Vulcan argues that Fata knew that a lost foam casting system meeting the General Motors specifications would or could reasonably infringe Vulcan's patent, and that Fata took no steps to obtain the advice of counsel until it was notified of infringement.

Although we view the question as close, Vulcan has not shown clear error in the district court's finding that Fata's infringement was not willful, or that the court abused its discretion in declining to enhance damages. Although Fata did not show that it obtained legal advice before submitting its bid, it acted promptly upon receiving notice of infringement, at a time when its bid had been accepted but no other infringing activity was shown. We note the thoroughness with which the district court explored the issue, and on this close question give deferential weight to that court's evaluation of the evidence.

The district court also rejected Vulcan's assertion that this was an exceptional case, and denied the requested attorney fees. We do not intrude upon the district court's exercise of discretion on this issue.

IV

THE REQUESTED NEW TRIAL

Fata moved for a new trial pursuant to Fed. R. Civ. P. 59, stating that it wished to introduce additional prior art with respect to patent validity. A district court's denial of a new trial based on assertedly newly discovered evidence is reviewed for abuse of discretion. *See Good v. Ohio Edison Co.*, 149 F.3d 413, 423 (6th Cir. 1998). We apply Sixth Circuit law to this procedural aspect, taking note that this standard appears to be common to all circuits. *See generally National Presto Indus., Inc. v. West Bend Co.*, 76 F.3d 1185, 1188, 37 USPQ2d 1685, 1686 (Fed. Cir. 1996) (applying regional circuit law to procedural matters that are not unique to patent cases).

Fata filed this motion seven months after the liability trial had closed and two months after the court's announcement of its decision on validity. Final judgment had not been entered, for the damages phase had not been completed. Fata argues that it satisfied the requirements of Rule 59(b), which states that a motion for a new trial "shall be filed no later than 10 days after entry of the judgment." However, whether or not Fata's motion was untimely under Rule 59, the district court did not abuse its discretion in declining to grant a new trial.

Fata's motion cited several patents on a green sand casting system, all of which were issued before 1975. Fata states that it did not offer this evidence during the trial because it could not foresee how the court would interpret the patent. Fata does not explain how this purported uncertainty lulled it into avoiding this body of references. A party must present its evidence at the trial, absent some extraordinary development or unwarranted surprise, by a party or the court, whereby justice requires redoing the trial. The green sand casting system was before the court and the parties during the trial, and the now-offered patents were readily available public information. The district court's ruling that Fata had not presented justification for their belated presentation is well supported. The denial of a new trial is affirmed.

SUMMARY

We affirm the district court's ruling that the '787 patent is valid and infringed. We affirm the district court's award of lost profits for line 1, modified in that Vulcan may attempt to establish, on remand, entitlement to additional price erosion damages for line 1. The district court's denial of damages for lines 2 through 5 is affirmed, as is the denial of attorney fees, enhanced damages, and a new trial.

Each party shall bear its costs.

AFFIRMED; DAMAGES MODIFIED; REMANDED

MICHEL, *Circuit Judge*, dissenting in part.

I respectfully dissent from two of our damages rulings today.

I.

First, contrary to the majority's opinion, the district court most assuredly made factual findings concerning price erosion:

> [Vulcan's expert witness] Stewart assumed that had [the accused infringer] Fata not bid, Vulcan could have obtained the General Motors business at a higher price and therefore should be compensated for the erosion of its prices caused by Fata's infringement. *There is no evidence in the record to support Stewart's [i.e., Vulcan's] assumption that Vulcan computed its bid in response to Fata.* Vulcan did not know Fata was bidding an infringing system. * * * Vulcan lost the bid to Fata because its bid was almost a third higher. *There is no credible evidence to support Vulcan's assertion that its bid price to General Motors was shaped to respond to a bid for an infringing system. There is no credible evidence to support a claim for price erosion.*

(J.A. 58.24—58.25) (emphasis added). In other words, the district court found that Vulcan had failed to satisfy its burden of showing that, indeed, Vulcan had "computed [or shaped] its bid in response to Fata."

I agree that portions of the above-quoted language could suggest that the district court may have inadvertently (and impermissibly) required Vulcan to also show that it knew Fata was bidding with an infringing system, though that does not seem immediately clear to me either. Regardless, even assuming the district court did require this showing, that requirement would amount to nothing more than harmless error, *see* Fed. R. Civ. P. 61, given again that no "credible evidence" shows that Vulcan had in any event shaped its bid to GM in response to Fata's competing bid. In my view, then, it would seem a waste of judicial resources, not to mention client fees, to remand this particular issue to the district court so the court, again, could simply reiterate what it had said before; that no "credible evidence" supports a claim that Vulcan had shaped its bid in response to Fata's.

The majority cites to testimony from Vulcan's president, Bruce McMellon, suggesting that this testimony further justifies its decision to remand on this price-erosion point. But again, the district court assumedly rejected this evidence as "incredible," a fair assumption given that the testimony came from a witness as putatively biased as the president of Plaintiff Vulcan itself. Moreover, Vulcan itself does not decry the district court's findings in this regard as insufficient or "clearly erroneous," *see* Fed. R. Civ. P. 52(a), the high standard it would have to meet in order to obtain a reversal on a factual determination. And yet, the majority appears to do just that, noting that some evidence, *e.g.*, McMellon's testimony, supports Vulcan's price-erosion claim and, at the same time, narrowly reading the district court's opinion so that it squarely "hold[s]" that Vulcan had to know that the system Fata was offering was an infringing system. I do not read the district court's opinion so

narrowly, and would not substitute my view of the evidence for the facts found by the district court, especially since Vulcan itself does not challenge these factual findings as clearly erroneous.

II.

Second, however, I do believe the district court and the majority have erred by determining that the license agreement between Vulcan and GM — a nonparty — precluded Vulcan from recovering damages from Fata for infringing lines 2-5. As I understand it, the district court's decision in this regard actually rested on two reasons: first, that allowing Vulcan to benefit from both the license agreement it had with GM and from the damages that Vulcan tried to recover for these infringing lines would constitute a double recovery or "windfall"; and second, that damages for infringing "offers to sell" under 35 U.S.C. § 271 and damages for actual sales "qualitatively" differ, meaning the evidence needed to prove an entitlement to each must also differ. Vulcan, reasoned the district court, had simply and mistakenly relied on the same type of evidence to prove damages for the infringing "offers to sell" as it had to prove damages for the completed infringing sale.

Both of these asserted rationales have facial appeal. But on closer scrutiny, neither holds up as applied to the facts of this case. First, the license agreement neither absolves Fata of damages for infringing lines 2-5 nor gave Vulcan a "windfall." It bears emphasizing that the language of the agreement took pains to make clear that Vulcan and the only other party to the agreement (GM)

did not in any way intend to foreclose Vulcan's right to recover damages against Fata:

> This [Vulcan-GM] Agreement *does not waive, release, compromise or discharge any claim that Vulcan may have against Fata with respect to* the first casting line delivered by Fata to the GM Saginaw, Michigan facility or *any claim Vulcan may have against Fata for Vulcan failing to obtain the business of supplying the five casting lines for the GM Saginaw facility.*

(J.A. 58.15) (emphasis added). By any reasonable interpretation, the language above does not in any way limit the damages that Vulcan could receive for "failing to obtain the business," *i.e.*, the lost sales for supplying casting lines 2-5. Remember, too, that GM and Vulcan had signed this license after the liability phase of the trial but before the damages phase of the trial had begun. So one would hardly expect Vulcan to agree to a contract that would in turn forego its rights to receive the full amount of damages that otherwise seemed destined to come its way. After all, the district court indicated in May 1999, *i.e.*, before GM and Vulcan signed this license agreement, that it had already found Fata liable for infringing all nine casting lines.

Further, nothing in the license contract suggests that any party besides GM and Vulcan had rights under it. Thus, we can hardly say that Vulcan had licensed or "permitted" Fata to do anything without incurring damages for it; to the contrary, the license merely gave *GM* the right to timely *receive* these four infringing lines without having Vulcan stand in the way, *e.g.*, by seeking

an injunction enjoining Fata's delivery of these lines. And neither party suggests that Fata somehow qualified as a third-party beneficiary to this license agreement, notwithstanding the clear language used to preserve Vulcan's right to recover damages against Fata.

The district court's reasoning about Vulcan receiving a "windfall" also does not persuade me. Again, the license agreement was between GM and Vulcan, not Vulcan and Fata. And GM and Vulcan each received valuable consideration under their bargain, thereby making their agreement a binding one. For its part, GM received the right to have Fata provide the four infringing systems that Fata had already finished manufacturing without Vulcan exercising its right to thwart Fata's delivery. In other words, GM received assurances that Vulcan would not deter the *timely* delivery of the systems that Fata was ready to produce by seeking, *e.g.*, an injunction that would prohibit this delivery. (As Vulcan's counsel indicated at oral argument, Vulcan did not have any ready-made casting lines that it could immediately deliver in Fata's stead, at least not for the infringing lines 2-5.)

In exchange, GM gave Vulcan the right to some of the "business" it had otherwise lost — the business of providing the other lines (lines 6-9) that Fata had not yet made (and that GM, presumably, did not immediately need), along with opportunities to bid on other GM contracts. This consideration does not amount to a "windfall"; it simply constitutes the consideration that GM gave in exchange for Vulcan forfeiting its right to seek relief that would enjoin the delivery of lines 2-5. Vulcan never received any damages (or any other remedy, for that matter) for the four acts of infringement relating

to lines 2- 5. Put differently, Vulcan received nothing to make it "whole" for profits lost to Fata as a result of the four infringing devices that GM accepted, contrary to the very purpose of awarding damages in the first place.

Last, the district court should have considered the evidence that Vulcan used to prove damages for the four infringing "offers to sell," even though Vulcan presented the same type of evidence for these "offers to sell" as it did for the completed sale of an infringing line. In this case, GM could have lawfully offered the Saginaw agreement (including lines 2-5) to Vulcan only. This is so because GM's contract specifications set forth the exact requirements that Vulcan's '787 patent already covered. In addition, GM approached only two companies about providing the nine casting lines that it needed for its Saginaw foundry — Vulcan and Fata. And only two companies thereafter sought this business with GM — Vulcan and Fata. So unless GM suddenly changed its contract specifications and opened up the bidding to other companies or unless Vulcan simply decided not to enforce its patent rights at all, no one besides Vulcan — one of only two parties approached by GM — could have supplied all the requested casting lines. (The record, by the way, does not bear out any of these hypothetical situations.)

In these circumstances, then, Vulcan correctly asserts that a "but for" test should determine the damages it can recover for an infringing offer for sale, given again that only two suppliers (Vulcan and Fata) competed in the relevant market:

> The question to be asked [is] primarily: had the Infringer not infringed, what would Patent Holder * * * have made? *In determining such damages, the profits lost by the patent owner in a two-supplier market is a proper ground for granting relief. Lost profits may be in the form of diverted sales,* eroded prices, or increased expenses. The patent holder must establish a causation between his lost profits and the infringement. *A factual basis for the causation is that 'but for' the infringement, the patent owner would have made the sales that the infringer made,* charged higher prices, or incurred lower expenses.

Lam, Inc. v. Johns-Manville Corp., 718 F.2d 1056, 1064-65 (Fed. Cir. 1983) (quoting *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 507 (1964)) (citations omitted) (emphasis added). Applying the "but for" test, therefore, Vulcan would indeed have obtained the GM business: "But for" Fata's four infringing offers, Vulcan —the only party whose patented casting line "read on" to GM's contract specifications — would have received these four contracts to build casting lines 2-5. Accordingly, the "offer-to-sell" damages (and the type of evidence needed to show them) here are indeed the same as the damages (and the type of evidence needed to show them) that Vulcan would have received for any other infringing sale, *i.e.*, lost profits resulting from these four lost sales. Again, however, Vulcan received nothing for the loss of these four contracts, in derogation of the principle that damages should make aggrieved parties whole. The benefits that Vulcan received in its license agreement with GM merely constituted the consideration that Vulcan received for giving away its right to obtain

another remedy; namely, an injunction against Fata's imminent and infringing delivery of lines 2-5.

Nevertheless, the district court failed to more closely construe the plain language of the GM-Vulcan license, and it failed to consider that this agreement gave rights to GM only. In addition, the court failed to apply the "but for" test for a two-supplier market. Accordingly, I would vacate and remand this portion of the court's judgment for additional findings about the damages owed to Vulcan for the four infringing offers to sell. The district court could have calculated these damages by examining the same type of evidence that Vulcan had presented for any other completed-but-infringing sale.

III.

For the reasons stated above, I would affirm the express findings made by the district court about no price erosion. But I would vacate and remand the court's determination about the damages for the infringing offers to sell lines 2-5. I therefore respectfully dissent, in part, from the majority's decision.

AMENDED OPINION OF THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF MICHIGAN, SOUTHERN DIVISION DATED AND FILED AUGUST 01, 2000

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

Case No. 98-74495

VULCAN ENGINEERING CO., INC.,

Defendant,

v.

FATA ALUMINUM, INC., and FATA GROUP, S.p.A.,

Defendants.

AMENDED OPINION*

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* This Amended Opinion incorporates the corrections set forth in the Errata filed on August 14, 2000 and the Supplemental Errata filed on August 16, 2000.

INDEX

Page

I. Introduction ..... [35a]

A. Overview ..... [35a]

B. Decision ..... [36a]

II. The Trial ..... [36a]

A. Vulcan's Witnesses ..... [36a]

B. Fata's Witnesses ..... [37a]

C. Exhibits ..... [39a]

III. Reasons For Decision ..... [39a]

A. Notice ..... [39a]

1. Preliminary ..... [39a]

2. Date Of Actual Notice ..... [40a]

B. Infringing Acts ..... [43a]

C. Damages ..... [49a]

1. Line 1 ..... [49a]

a. Preliminary ..... [49a]

b. Loss of Profits ..... [52a]

2. Lines 2-5 ..... [57a]

INDEX (continued)

Page

D. Willfulness ..... [59a]

E. Exceptional Case And Misconduct ..... [62a]

IV. Conclusion ..... [64a]

I. INTRODUCTION

A. Overview

This is the accounting phase of a patent case. On May 21, 1999, the Court, in a bench decision memorialized in the Amended opinion filed August 10, 1999, found that

> Fata did not overcome the presumption of validity that attaches to an issued patent by establishing with clear and convincing evidence that the '787 patent is invalid

and

> . . . Vulcan established by a preponderance of the evidence that the lost foam casting system that Fata sold to [General Motors Corporation] Saginaw [casting facility] infringed the '787 patent

and concluded that

> The case will now go forward with a trial on wilfulness and appropriate relief.

The issues of willfulness and appropriate relief were tried to the Court in October, 1999 (3 days) with the proofs reopened in February (1 day) and March (1 day) of this year.

On March 28, 2000, the Court entered a permanent injunction enjoining Fata

> from the unauthorized making, using, selling or offering to sell in the United States any device embodying any of the claims of U.S. Patent No. 4,736,787 for the remaining term of the patent

and stated that the injunction did

not extend to the sale and delivery of casting lines 2 through 5 for the Saginaw foundry of General Motors Corporation by defendant.

B. Decision[1]

For the reasons which follow, which constitute the findings of fact and conclusions of law required by Fed. R. Civ. P. 52, the Court finds that:

— Vulcan is entitled to damages in the form of lost profits of $2,187,199 on Fata's manufacture of line 1 to Saginaw as an infringing act.

— Fata's infringement was not willful.

— This is not an exceptional case and Fata did not engage in litigation misconduct.

II. The Trial

The trial was unexceptional. Principal witnesses testified on direct in narrative form. The parties used substantially fewer trial hours than were allocated.

A. Vulcan's Witnesses

Testifying in Vulcan's case were:

— Bruce McMellon, president of Vulcan. McMellon described the history of the Vulcan/Fata relationship, the quotation to General Motors, the notice to General Motors

1. In telephone conference calls with the parties on February 1, 2000 and May 9, 2000, the Court advised the parties of its conclusions on certain of the issues. The Court has incorporated and elaborated on these conclusions in this opinion.

and Fata of infringement, his first awareness of the Fata system, the lack of alternatives, the Vulcan/General Motors license agreement covering lines 2 through 5, the profit margin of Vulcan, and the imperfections in the opinion letters received by Fata.

— Richard Hendricks, chief financial officer of Vulcan. Hendricks described financial data of Vulcan including overhead and direct costs, percentage relationship of costs, follow-on sales estimates, and price erosion.

— Marion Stewart, an expert witness. Stewart estimated Vulcan's loss of profits due to Fata's infringement based on Vulcan's financial data and Fata's revenues from General Motors on line 1 as well as estimated revenues from lines 2 through 5.

— Alessandro Bertolini, Fata's in-house patent lawyer. Bertolini described Fata's activities after being notified by General Motors of Vulcan's claim of infringement.

— Donald Wood, a patent attorney. Wood described his work on, and the content-of, the two opinion letters he gave Fata regarding validity and infringement of the '787 patent.

B. Fata's Witnesses

Testifying in Fata's case were:

— Alan Steffe, General Motors engineering manager for the foundry section. Steffe described the bid specifications for Saginaw, his lack of knowledge of the 1787 patent until notice by Vulcan, and General Motors' historic relationships with Vulcan.

— Marzio Raveggi, chief executive officer of Fata. Raveggi described his knowledge of the 1787 patent, the

opinion he received from Bertolini, Fata's experience with lost foam casting, and Fata's agreement with General Motors for the delivery of lines 2 through 5 for Saginaw following the Court's May 1999 decision.

— Bertolini described his awareness of the '787 patent, his efforts regarding the Wood opinion letters, and his efforts to obtain opinions from European patent lawyers.

— Wood described in further detail his work regarding his two opinion letters in which he concluded the '787 patent was likely to be held invalid and that Fata's system did not infringe.

— Alfredo Dal Pan, technical director of Fata. Dal Pan described the differences between Vulcan's system and Fata's system and his conclusions about the '787 patent.

— Michelle Peltier, a General Motors senior buyer in the powertrain division. Peltier described the solicitation of bids for Saginaw, the award to Fata, the manner in which General Motors awards a contract to a successful bidder, and the significance of a General Motors purchase order.

— Brian Baker, vice-president of sales for Vulcan. Baker described Vulcan's bid packageand his lack of awareness of Fata's infringement.

— J. Lester Alexander, III, an expert witness. Alexander estimated Vulcan's loss of profits and a reasonable royalty rate to Vulcan because of Fata's infringement.

— Lee Schutzman, a General Motors attorney. Schutzman described the negotiations for the July 1999 agreements between Vulcan and General Motors and Fata and General Motors, and his understanding of what was

intended by these agreements and General Motors' award of a contract to a successful bidder and the significance of a General Motors purchase order.

C. Exhibits

Exhibits included General Motors' solicitation of bids for Saginaw, specifications, drawings, Vulcan's and Fata's bids, General Motors purchase orders, correspondence, photographs, brochures and articles, financial reports, financial analysis, and Wood's complete office file (60 separate papers).

III. Reasons For Decision

A. Notice

1. Preliminary

A precursor to a finding of Vulcan's loss of profits because of Fata's infringement is the date of actual notice, 35 U.S.C. §287(a). Concededly, none of the Vulcan lost foam casting lines manufactured prior to the General Motors solicitation were marked. Therefore, damages may be recovered only from the time the actual notice of infringement was given Fata. *Id.* As explained in Schwartz, *Patent Law & Practice*, 2nd Ed. (FJC 1995) p. 117 (citations omitted):

> Actual notice sufficient to satisfy §287 (a) "requires the affirmative communication of the specific charge of infringement by a specific accused product or device." Whether actual notice was given is determined by focusing on the actions of the patent owner, not by focusing on the knowledge of the infringer. Thus, it is irrelevant that the infringer knew of the patent or knew that he or she was infringing.

The date of actual notice of infringement by Vulcan to Fata has some relevance in light of the fact that, as will be discussed, Fata concedes liability on the sale of line 1 only and asserts it has no liability on the sale of lines 2 through 5.

2. Date Of Actual Notice

On or about March 6, 1997, McMellon and Raveggi talked by telephone in a call initiated by Raveggi. In the conversation McMellon queried Raveggi on how Fata could make a bid in response to the General Motors solicitation because "the systems would infringe Vulcan's patent." Tr. 10/25/99, p. 37. Raveggi's response is not clear. McMellon did not mention a patent number and did not accuse Fata of infringement. This conversation is not actual notice as required by the statute.

On August 6, 1997, following notification from General Motors that it was not the successful bidder, Vulcan wrote General Motors (Px 28) identifying the '787 patent by number and stating in part:

> The Italian supplier cannot legally furnish the system as requested.

General Motors, on August 12, 1997, sent the Vulcan letter to Fata by letter (Px 27) stating:

> Your attention is directed to the attached letter dated August 5, 1997 from Vulcan Engineering Company indicating that the casting lines Fata is to provide General Motors under GM Purchase Order TCS 17764 is covered by the U.S. Patent 4,736,787. We trust you will look into, and take care of, this matter pursuant to Paragraph 14 of the terms and conditions of that purchase order.

A copy of this letter was sent to Vulcan (Px 283). Paragraph 14 of the General Motors form of purchase order, (Px 56) states:

> 14. Intellectual Property:
>
> Seller agrees:
>
> (a) to defend, hold harmless and indemnify Buyer, its successors and customers against all claimed demands, losses, suits, damages, liability and expenses (including reasonable attorney fees) arising out of any suit, claim or action for actual or alleged direct or contributory infringement of, or inducement to infringe, any patent, trademark, copyright or mask work right by reason of the manufacture, use or sale of the goods or services ordered, including infringement arising out of, in compliance with specifications furnished by Buyer or for actual or alleged misuse or misappropriation of a trade secret resulting directly or indirectly from

The same language appears in the General Motors solicitation (Px 39). General Motors considered Vulcan's letter as actual notice of infringement since it called Fata's attention to paragraph 14 of the purchase order.

Bertolini considered Vulcan's letter as actual notice of infringement. He immediately came to the United States and put in motion a program to determine whether or not the Fata system in fact infringed. Bertolini testified:

> Q. . . . But when you read the letter you knew that there was an accusation that if the Italian supplier built a system that met the General Motors specifications they would be infringing Vulcan's patent, didn't you?

A. To GM, yes.

. . . .

Q. . . . So by the third week of August you knew that this letter was stating that if Fata built a system that met the General Motors specifications they would infringe the Vulcan patent?

A. He was saying that to GM, he was inferring that to GM, yes.

Q. . . . And you understood that that's what they were saying, didn't you?

A. Yes.

Tr. 10/27/99, pp. 23-24.

Vulcan gave actual notice of its claim of infringement to Fata on or about August 13, 1997 when Fata received the letter from General Motors enclosing a copy of the Vulcan letter. Fata was aware that General Motors sent a copy of its letter to Vulcan and therefore was aware that Fata knew that it was being accused of infringement.

This is not a circumstance where the patent owner simply notified the infringer of the existence of the patent or where the infringer was simply aware of the patent: As stated in *Wokas v. Dresser Industries. Inc.*, 978 F.Supp. 839, 845 (N.D. Ind. 1997)

> If the [infringer] could conclude that the letter charged infringement, certainly a fact finder could conclude the same.

Fata's infringement is to be measured by Fata's acts subsequent to August 13, 1997.

B. Infringing Acts

As noted above, Fata concedes liability on the sale of line 1 to General Motors. Fata, however, disputes any other infringing act. Vulcan asserts that Fata is liable for damages as a consequence of its response to the General Motors solicitation. In other words, Fata's bidding with an infringing design constituted infringement and subjected Fata to liability as an infringer. While Vulcan's papers do not articulate its claim for damages beyond the sale of line 1 in the fashion just mentioned, this theory is clear from Schutzman's description of the Vulcan/General Motors agreement July 28, 1999 allowing for delivery of lines 2 through 5 to General Motors following the Court's finding of infringement on May 21, 1999. *See* tr. 2/17/00, pp. 14-25 and p. 39.

What happened was this: On July 28, 1999, Vulcan granted General Motors a limited license to take delivery of lines 2 through 5 from Fata (Dx 450), and, in turn, on July 30, 1999, Fata and General Motors agreed to a cancellation of the General Motors purchase order for Lines 6 through 9 in Defiance, Ohio (Dx 449). In the Vulcan/General Motors agreement (Dx 450) Vulcan also received a purchase order for these lines at Defiance.

Vulcan initially claimed damages for lines 2 through 5 as infringing acts. It was only following the reopening of the proofs this year that it became clear that Vulcan was overreaching. Paragraph 2 of the July 28, 1999 agreement states:

> 2. Vulcan hereby grants to GM a limited license to have made by Fata, use sell and offer to sell or otherwise dispose of the four remaining casting

> lines to be supplied for the Saginaw facility by Fata. The license to GM specifically authorizes Fata to supply to and install these four remaining casting lines at the GM Saginaw facility.

Paragraph 4 of the agreement reads:

> 4. This Agreement does not waive, release, compromise or discharge any claim that Vulcan may have against Fata with respect to the first casting line delivered by Fata to the GM Saginaw, Michigan facility or any claim Vulcan may have against Fata for Vulcan failing to obtain the business of supplying the five casting lines for the GM Saginaw facility.

Having authorized Fata to supply and install lines 2 through 5, Vulcan cannot claim these acts constitute infringement and that it is entitled to damages as a consequence. Coupled with the General Motors business for lines 6 through 9 at Defiance, this would give Vulcan a windfall.

What Vulcan reserved in Paragraph 4 were damages on its failure to obtain the business of supplying lines for Saginaw. As Fata puts it in Defendant's Motion For Judgment On Partial Findings, filed October 29, 1999:

> When Vulcan signed the July 28, 1999 agreement with GM authorizing Fata to make, deliver and install Lines 2 through 5 at Saginaw, it concurrently bargained for the contract for the four Defiance lines, which right was memorialized in the same agreement. By its clear terms, the Vulcan license was a prospective grant or permission to use the patent.

> While it is true that a prospective license, such as the one given by GM to Vulcan and Fata, does not necessarily release claims for patent infringement, such claims must "stand on their own," and where, as here, no infringing conduct occurred after "actual notice" was achieved on September 15, 1998 (or, at the earliest, in August of 1997), the patentee's effort to preserve, in a license, claims for prelicense infringement, are ineffective. Accordingly, and notwithstanding Vulcan's attempt, when it signed the July 28, 1999 license to specifically preserve its pre-license claims against Fata for the loss of Saginaw Lines 2 through 5, such provision cannot create a cause of action giving rise to damages which did not preexist in the license.

Thus, the question is really what, if any, infringing acts occurred between the date of actual notice, August 13, 1997, and July 28, 1999, the date of the Vulcan/General Motors agreement. The chronology of events begins with General Motors' solicitation on February 11, 1997 (Px 39). The solicitation states, "This is a request for quotation — not an order." It contained General Motors' standard purchase order terms. It covered nine lines (Px 38). Fata submitted a quotation on March 10, 1997 (Px 295). Fata submitted revised quotations on July 29, 1997 (Dx 447 and Dx 448).

On August 6, 1997, Peltier orally advised Fata that it was the successful bidder and would be awarded a contract for the nine lines. Purchase orders containing General Motors' standard conditions were issued as follows:

Date	Line	Location	Exhibit
8/6/1997	1	Saginaw	Px 56
4/9/1998	2	Saginaw	Px 307
4/9/1998	3	Saginaw	Px 308
4/9/1998	4	Saginaw	Px 309
4/9/1998	5	Saginaw	Px 310
4/26/1999	6	Defiance	Px 311

Each purchase order states on its face:

> This order is not binding until accepted. Acceptance should be executed on acknowledgment copy which should be returned to buyer.[2]

Each purchase order on the reverse side states:

> 1. Acceptance: Seller has read and understands this order comprising of these general purchase order terms and conditions and any specific orders for the supply of goods and services to be supplied by buyer to seller and agrees that seller's written acceptance or commencement of any work or service under this order shall constitute seller's acceptance of these terms and conditions only.
>
> 29. Entire Agreement:
>
> This order, together with the attachments, exhibits, supplements or other special terms of Buyer specifically referenced in this order, constitutes the entire agreement between Seller and Buyer with respect to the matter contained herein and supersedes all prior oral or written representations and agreements.

---

2. There is no evidence in the record of a formal acceptance by Fata of any of the purchase orders.

Fata's argument that Peltier's telephone call to Fata on August 6, 1997 that it was the successful bidder formed a contract between General Motors and Fata has no merit. Fata takes this position in an effort to put infringement prior to the date-of- actual notice. General Motors was not obligated to Fata prior to the issuance of a purchase order. Indeed, on August 6, 1997, Saginaw had yet to be funded. Tr. 3/29/00, pp. 21-29. There is simply nothing in the record to suggest that either Fata was obligated to sell casting lines to General Motors or General Motors was obligated to buy casting lines from Fata until the issuance of the purchase orders. A binding contract between the parties came into existence only with the issuance of a purchase order. Schutzman responded to the Court's question as follows:

THE COURT: . . . do you think General Motors is ever obligated on any contract if it's not memorialized in writing of this magnitude?

THE WITNESS: No, Your Honor . . .

THE COURT: . . . do you think any Vendor of General Motors thinks it can sue General Motors for breach of contract if it isn't memorialized in paper?

THE WITNESS: It would be certainly my position they could not.

Tr. 2/17/00, p. 33.

35 U.S.C. § 271 states in part:

> . . . whoever without authority . . . offers to sell . . . sells . . . any patented invention . . . infringes the patent.

So long as Fata did not withdraw its quotation, Fata was continuing to offer to sell General Motors infringing systems. There can be no disagreement that had Vulcan brought suit against Fata subsequent to August 13, 1997 and prior to April 9, 1998, when the purchase order for line 2 was issued (Px 307), Vulcan would have been entitled to an injunction against Fata delivering lines to General Motors.

The "offer to sell" prohibition in Section 271 is of recent origin. *See Beloit Corp. v. Valmet Corp.*, 44 U.S.P.Q. 2d 1792, 1795 (W.D. Wis 1997) (holding that section 271 was designed to bring United States law into compliance with the General Agreement on Tariffs and Trade). Certainly Fata's quotation to General Motors is stronger evidence of an offer to sell than the price quotations letter at issue in *3D Systems Inc. v. Aarotech Laboratories, Inc.*, 160 F.3d 1373, 1379 (Fed. Cir. 1998), where the Federal Circuit said:

> As a matter of federal statutory construction, the price quotation letters can be regarded as "offers to sell" under § 271 based on the substance conveyed in the letters, i.e., a description of the allegedly infringing merchandise and the price at which it can be purchased. Moreover, such a construction harmonizes with the broad definition of "offer to sell" provided in §271(i).

The "offer to sell" addition to Section 271 clearly obviated the problem encountered prior to the amendatory language in asserting infringement when the infringing device was still in development. *See AB Volvo v. Eaton-Kenway, Inc.*, 582 F.Supp. 579 (N.D. Ohio 1984) (holding that an auto carrier system which, when completed would infringe, is not in contravention of Section 271's prohibition on the sale of an infringing device.)

The true question then is what, if any, damages Vulcan may recover as a consequence of "failing to obtain the business of supplying the five casting lines . . ." as of April 13, 1997.

C. Damages

The determination of Vulcan's damages claim is complicated by the failure of the parties to qualitatively and quantitatively differentiate infringement by an "offer to sell" from infringement by a "sale," 35 U.S.C. §271. Fata infringed in the sale of line 1 to General Motors; that is conceded. Fata also infringed in the offer to sell lines 2 through 5. Accordingly, separate determinations must be made.

1. Line 1

a. Preliminary

As to line 1, the first issue is whether Vulcan is entitled to loss of profits or limited to a reasonable royalty, 35 U.S.C. §284. This was a two-supplier market. There were no reasonable alternatives to meeting the General Motors specification beyond the Vulcan system. The record does not support a finding that there were any acceptable alternatives to the '787 patent for supplying a continuously linked lost foam casting system with all stations on line. The General Motors specification essentially called for a duplication of the casting lines at Saturn and Massena, New York. *See* discussion in Amended opinion at pp. 15-17. An offer to supply a non-continuously linked casting line with compaction off line would not have been responsive to the General Motors solicitation. Such a system would not have been as efficient and would not have been state of the art. The '787 patent system was the only state-of-the-art system.

Additionally, but for the purchase from Fata, General Motors would have awarded its business to Vulcan. General Motors did not turn to a non-infringing alternative following the May 1999 finding of infringement but rather agreed to buy the Defiance lines from Vulcan at its bid price. Fata's argument that a reasonable alternative to the patented system was available is based solely on speculation and conjecture. Fata's citations to the record to the contrary, tr. 10/25/99, p. 68, tr. 10/26/99, pp. 113-14, do not suggest otherwise.

If Fata had not responded to the General Motors solicitation of the contract for Saginaw, the business would have gone to Vulcan, the only other bidder. Schwartz, *Patent Law & Practice*, 2ed. (FJC 1955), pp. 104-11 (citations omitted), states the rule in such cases as follows:

> The two traditional measures for monetary damages awarded under 35 U.S.C. §284 are lost profits and royalties either established or hypothetical. The lost profits measure is appropriate where the patent owner and infringer compete in the same market.
>
> The prevailing party in a successful suit for patent infringement is entitled to an award of profits lost because of diverted sales, price erosion and increased costs, where provable. Such an award is usually composed of profits lost by the patent owner and profits made by the infringer.
>
> . . .
>
> The final element of proof called for in *Panduit*[3] involves the quantum of profit a patent owner would

3. *Panduit Corp. v. Stahlin Bros. Fibre Works. Inc.*, 575 F.2d 1152 (6th Cir. 1978).

have made. Where a diversion of sales is proven, lost profits are measured by multiplying the marginal profit loston the diverted sales by the sales total that the patent owner would have garnered.

. . .

In calculating marginal profit, only a reasonable approximation must be proven, and any uncertainty regarding the amount is resolved against the infringer. The margin of profit is determined by subtracting from expected revenue the incremental or marginal costs, not full absorption costs, that the patent holder would have incurred as a result of the increased sales. Expected revenue is the expected price multiplied by expected sales.

Incremental costs are those costs which would have increased with a rise in sales volume. Normally only variable costs such as direct labor and materials are taken into account. Not included are fixed costs such as insurance, property taxes and administrative, management and noncommission sales expenses. The patentee's costs may be proven by his or her historical financial records if they are sufficiently detailed. Otherwise, they may be reconstructed by expert testimony. Where proving the patentee's costs is not possible, the infringer's profits or nominal industry profit margin may be examined as evidence of the patentee's lost profit. Once the patent owner has established his or her profit margin, it is up to the infringer to prove that the patent owner's proofs are unreasonable.

> Preinfringement prices are generally used in calculating lost revenues so that the patent owner is not penalized because of price erosion caused by illegal competition. Price erosion may be taken into account where prices have increased in the absence of infringement.

Paper Converting Machine Co. v. Magna-Graphics Corp., 745 F.2d 11, 22 (Fed. Cir. 1984) explains:

> The incremental income approach to the computation of lost profits is well-established in the law relating to patent damages . . . The approach recognizes that it does not cost as much to produce unit N + 1 if the first N (or fewer) units produced already have paid the fixed costs. Thus, fixed costs — those costs which do not vary with increases in production, such as management salaries, propery taxes and insurance — are excluded when determining profits.

b. Loss Of Profits

Vulcan, through Stewart, and Fata, through Alexander, each computed the loss of profits to Vulcan because of its failure to obtain the General Motors business for line 1 through the incremental income approach. The financial data used in the determination were Vulcan's historical financial performance[4] as well as Vulcan's experiences at Saturn and Massena in the sale of casting lines. Beyond the loss of profits on the sale of line 1, the damages computation also included the potential profit on change orders and follow-on sales as well as price erosion (Stewart only).

---

4. Alexander went beyond historical financial performance.

i. Stewart's Approach

Stewart was somewhat aggressive in his overall determinations. He included a profit amount to Vulcan for what he said was a reduction in Vulcan's price bids because of the competing bids from Fata with an infringing system. Stewart assumed that had Fata not bid, Vulcan could have obtained the General Motors business at a higher price and therefore should be compensated for the erosion of its prices caused by Fata's infringement. There is no evidence in the record to support Stewart's assumption that Vulcan computed its bid in response to Fata. Vulcan did not know Fata was bidding at infringing system. McMellon acknowledged that he anticipated Fata would be offering a noninfringing system to General Motors. Tr. 10/25/99, p. 68. Vulcan lost the bid to Fata because its bid was almost a third higher. There is no credible evidence to support Vulcan's assertion that its bid price to General Motors was shaped to respond to a bid for an infringing system. There is no credible evidence to support a claim for price erosion.

Stewart's calculations were based on financial data taken from the books and records of Vulcan as well as the cost estimates Vulcan used in determining the prices it would bid to General Motors with one exception. Vulcan calculated the fixed overhead allocated to the prospective General Motors business as 137 percent of direct labor. Stewart, based on his review of Vulcan's records, determined these figures to be in fact 200 percent of direct labor. While Stewart may be correct, Vulcan's historic determination is a more reliable figure for determining loss of profits. Therefore, the 137 percent figure will be used.

In addition to the loss of profit on line 1, Stewart determined, on the basis of Fata's experiences with General Motors relating to its supply of line 1, a profit amount for

change orders. Based on Vulcan's experience at Saturn and Massena, Stewart also estimated the follow-on sales Vulcan likely would have made had it been the successful bidder on line 1. In sum, Stewart explained what he did as follows:

> Lost profits on lost sales are equal to the revenue the patent owner would have gained had it made those sales minus the incremental cost of making those sales. In order to calculate lost profits on lost sales accurately, only those costs that would have actually increased if the sale had been made should be subtracted from lost revenue. Costs that would not have been increased as a result of making the sales are fixed costs which should be subtracted from lost revenue. Fixed costs, including any fixed overhead costs, should not figure in the calculation of lost profits since those costs will remain the same whether additional sales are made or not.

Damage Narrative of Marion B. Stewart, 10/25/99. Stewart's approach is not new. As described in *Levin Bros. v. Davis Mfg. Co.*, 72 F.2d 163, 166 (8th Cir. 1934):

> [Stewart] divided the items of overhead into those which could not be and were not increased by adding [Line 1] to [Vulcan's] business and those which had a direct connection with the sale and manufacture of [the line].

ii. Alexander's Approach

Alexander's determination, while following generally the structure of Stewart's, differed substantially in calculating variable costs. This, of course, had the effect of lessening his estimate of the loss of profits to Vulcan in comparison to

Stewart's determination. Alexander deducted from the gross revenues every cost of Vulcan which varied over a five-year time period regardless of whether the costs would have varied had Vulcan manufactured and supplied line 1 to General Motors. Alexander deducted management salaries, property taxes and insurance as well as other salaries not affected by the General Motors business, such as the accounting department, sales personnel, purchasing personnel, telephone operators and human resources personnel.

The essential differences between Stewart and Alexander were in their approach to what constituted fixed costs. As noted above, Alexander's approach substantially lessens Vulcan's loss of profits. With a jury there's no explanation, only choice. While the Court is obligated to explain, there is certainly no need to replicate Stewart's report, which the Court finds credible.

iii. Court's Determination

Given that Alexander went outside Vulcan's historic approach in separating fixed costs from various variable costs, his determinations fail in comparison to Stewart's. In like manner, Stewart's moving outside Vulcan's historic determination of overhead as a percentage of direct labor has been rejected

As to the amount Stewart projected for change orders and follow-on sales, Fata does not dispute these amounts but only the estimated loss of profits on such amounts. In other words, Fata's differences on loss of profits is directed only to the incremental profit percentage.

Stewart found Vulcan's incremental cost to be 33.4 percent of its bid price to General Motors. Alexander found Vulcan's incremental cost to be 15 percent of the bid price.

Stewart's calculations are reasonable, in that they are based on Vulcan's experience in the ordinary course of business and used in such course of business.

Based on Stewart's calculations for line 1 as reflected in Px 323 and utilizing the formula set forth in Px 402, Vulcan's damages in the form of lost profits on its bid price of $4,519,319 is $1,512,305 ($4,519,135 x 33.46%).

Vulcan's lost profits on change orders was set by Stewart at $266, 287. Stewart based his calculations on the change orders received by Fata for line 1 of $798,341. To this he applied the incremental cost percentage of 33.46%. (Px 348.) ($798,341 x 33.46%).

Stewart determined Vulcan's lost profits on follow-on sales as $407,607. Stewart took Vulcan's Saturn experience, Px 335; determined the amount of profit from these follow-on sales as a percentage of initial revenue to be 7.66%, (Px 336) and then applied this percentage to Vulcan's estimated revenue from line 1, (Px 337) ($[4,519,135 + $798,731] x 7.66%).

In summary, Vulcan's damages in the form of lost profits are:

Bid price:	$1,512,305
Change orders:	$ 267,287
Follow-on sales:	$ 407,607
	$2,187,199

This determination does not take into consideration appropriate adjustments, up or down, for cost of working capital or discounts to present value. Prejudgment interest must also be added before the final judgment amount is determined.

2. Lines 2 through 5

> As previously described, Vulcan, in the July 28, 1999 agreement with General Motors, granted a limited license for manufacture and supply of lines 2 through 5 and reserved the right to claim damages as a consequence of "failing to obtain the business of supplying the five casting lines . . ." as of August 13, 1997, the date of actual notice. Earlier, on April 27, 1997, Fata's bid in response to General Motors' solicitation was open. This became an infringing act as an "offer to sell" on August 13, 1997, since it continued to be open to acceptance on that date. That the damages to Vulcan as a consequence of this infringement must be qualitatively and quantitatively different than its damages as a consequence of the supply and delivery of lines 2 through 5 is clear from the provisions of the July 28, 1999 agreement.

Vulcan's approach to damages in not obtaining a purchase order from General Motors for lines 2 through 5 has been the same as its approach to damages for the loss of business of line 1, loss of profits. Stewart's damages computations on each of lines 1 through 5 was exactly the same except for adjustments necessary because of interest factors and deduction to present value as a consequence of timing differences. This is also true for its calculations of a reasonable royalty. *See* Plaintiff Vulcan Engineering Co., Inc.'s Proposed Findings of Fact and Conclusions of Law for the Damages Trial (Corrected) filed March 3, 2000, ¶ 12-14. Stewart found a reasonable royalty to be 58 percent of Fata's bid price to General Motors on the theory that Vulcan was not in the business of granting licenses and that a reasonable royalty should capture all of Fata's profits and put Vulcan in the same position as it would have been had it

made the sale of lines 2 through 5 to General Motors. This reasoning is further explained in Plaintiff's Damages Post-Trial Brief.

On May 9, 2000, the Court advised the parties as follows:

> Vulcan has not articulated a methodology for determining damages on an unsuccessful "offer to sell" proximately caused by a competitor's "offer to sell" an infringing product where the infringer subsequently is licensed to manufacture and deliver the infringing product. Given the uncertainties in determining whether or not the competing offer to sell would ripen into a completed sale, damages would appear to be speculative and conjectural and not capable of determination. Moreover, nothing in Vulcan's claim for damages, i.e., its papers in support of its claim for damages, reflect the fact that it is claiming damages on its offer to sell "proximately caused by the competing offer to sell."
>
> . . . .
>
> Whether notice was given on August 12, 1997 or notice was given when suit was filed is not material. Vulcan is entitled to a loss of profits on Line 1 only. The Vulcan/General Motors agreement effectively constituted a license to Fata to sell Lines 2 through 5. At most, Vulcan would be entitled to a reasonable royalty on Lines 2 through 5. A reasonable royalty, if awarded, should not capture the profits Fata made. However, Vulcan has not asserted its right to a reasonable royalty, and as previously noted, the damages under the circumstances here, on the rejection of Vulcan's

> offer to sell in favor of Fata's offer to sell, are speculative and conjectural given the uncertainly at the time that the purchase orders were issued of there ever being any completion.

Tr. 5/9/00, pp. 4-6.

Vulcan followed up with a letter on May 26, 2000 pointing out that 35 U.S.C. §284 "mandates a minimum award of a reasonable royalty for an infringement" and "it has asserted such a right as demonstrated by the damages testimony of Mr. Marion Stewart[etc.]." This latest assertion by Vulcan was simply a continuation of ignoring the bargain it made on July 28, 1999 when it granted General Motors a limited license to have Fata manufacture and supply lines 2 through 5, As has been stated, damages for infringement by an "offer to sell" and damages for infringement by a "sale" are qualitatively and quantitatively different. Vulcan has offered no jurisprudentially sound basis for such a determination on the record as it now stands. At best, Vulcan simply wants to take back with one hand what it gave out with the other hand. This it cannot do. Vulcan is entitled to nothing on its "failing to obtain the business of supplying [lines 2-5]." This is not because it is not entitled to damages for the failure, but because it has not proven the amount with any degree of certainty.

D. Willfulness

Vulcan asserts that Fata's infringement was willful, 35 U.S.C. §284, because the opinions Fata obtained from Wood following actual notice on August 13, 1997 were not obtained in good faith, but rather to appease General Motors and were conclusory and nonobjective. Vulcan argues that they were based on incomplete and erroneous information given Wood and that Fata knew this yet took no corrective action.

Fata, in response, says that Woods was an experienced patent lawyer and that he thoroughly and competently went about his work. Fata asserts that Vulcan's argument is merely that because Woods came to a conclusion different from that of the Court, Fata is guilty of willful infringement.

Vulcan is wrong. As soon as Fata received the August 6, 1997 letter from Vulcan to General Motors (Px 27), Bertolini, Fata's in-house counsel, came to the United States and obtained a reputable law firm to look into Vulcan's claim of infringement and Fata's offer to sell its system to General Motors. Wood, a member of the firm and an experienced patent lawyer, was assigned the responsibility of giving Fata opinions. Wood obtained from Fata, the drawings and specifications of its system, as well as the file history to the '787 patent, and familiarized himself with the art.

On September 12, 1997, Wood gave Fata a written opinion (Px 286) which concluded that each claim of the '787 patent was either invalid or did not cover the proposed Fata system. A copy of the opinion letter was sent to General Motors by Fata on September 24, 1997 (Px 288). Again, on December 18, 1997, after further research, including a cautionary letter from a General Motors patent attorney (Px 289), Wood in detail expressed the opinion that the Fata system did not infringe. Admittedly, Fata found no fault in the opinion letters and did not advise Wood of any errors in his description of the Fata technology.

At the same time Bertolini engaged the services of Wood's firm, he engaged the services of two European law firms to do searches of European patent offices on lost foam casting systems.

Wood's complete office file was in evidence. It consists of some 60 papers. Wood's narrative testimony on direct

covers 23 pages of text. Bertolini is a graduate of an American law school. Wood and Bertolini were both credible witnesses. Nothing in their testimony suggests a lack of sincerity or a predisposition to find an answer to appease General Motors. Likewise, there is nothing in the record to suggest that General Motors, after it received Wood's opinions, doubted their legitimacy. Importantly, Wood, in his consideration of validity and infringement, did not give online compaction the importance ascribed to it by the Court since he did not find it in the claims. That Wood and the Court differed in this regard does not denigrate either his competency or sincerity.

During the time Wood was working on his opinions on the '787 patent, he was also working on a Fata request for an opinion in response to Vulcan's claim on patents it held on gluing machines (Dx 427 and Dx 428). Fata was considering manufacturing such machines. Based on Wood's opinion that it would be an infringer if it proceeded, Fata abandoned the project.

The rule on willfulness is stated in *SRI International, Inc. v. Advanced Technology Laboratories, Inc.*, 127 F.3d 1462, 1464-65 (Fed. Cir. 1997), as follows:

> Although various criteria has been stated for determining "willful infringement," which is the term designating behavior for which enhanced damages may be assessed, the primary consideration is whether the infringer, acting in good faith and upon due inquiry, had sound reason to believe that it had the right to act in the manner that was found to be infringing. The law of willful infringement does not search for minimally tolerable behavior, but requires prudent and ethical legal and commercial actions. Thus, precedent displays the consistent theme of whether a prudent person would have had sound reason to believe that the

patent was not infringed or was invalid or unenforceable and would be so held if litigated.

Vulcan's challenge to Fata's reliance on the Wood opinions depends largely on McMellon's testimony and his disagreement with Wood's description of what the '787 patent calls for, the history of lost foam casting, and Wood's understanding of the Fata system. McMellon's analysis is not clear and convincing in light of the efforts expended by wood, the detail of the analysis in his opinions, and the manner in which Fata went about determining whether there was a real danger in going forward with General Motors. While Fata followed General Motors' specifications in the specifications called for in the '787 system, there is nothing in the record to suggest Fata had any suspicion General Motors was calling for it to infringe. Additionally, Fata evidenced a respect for patent rights generally in abandoning its efforts to sell General Motors a glue machine after being told its sales would be an infringement of a Vulcan patent.

Fata fulfilled its duty to exercise due care to determine whether or not it was an infringer. Fata acted prudently and ethically. That Fata turned out to be an infringer does not mean it willfully infringed.

E. Exceptional Case and Misconduct

Aside from Vulcan's claim of willfulness as a predicate for finding this case exceptional under 35 U.S.C. §285 and hence entitling it to an award of attorney fees, Vulcan also claims it to be exceptional as a consequence of Fata's litigation misconduct. The burden is on Vulcan to support this claim by clear and convincing evidence. *Carroll Touch Industries v. Electro Mechanical Systems, Inc.*, 15 F.3d 1573 (Fed. Cir. 1993).

Vulcan argues that Fata advanced disingenuous defenses, abused discovery pretrial, and engaged in litigation misconduct. Fata's response is simply that this was nothing more than a hard fought, sometimes contentious patent lawsuit. Fata is correct. This case was filed in late September 1998 in Birmingham, Alabama. Almost immediately it was transferred to this district. A hearing on a preliminary injunction was held in October of 1998. Fata agreed to hold up on delivery of lines 2 through 5 until a decision on Vulcan's claim of infringement. The case went to trial in March 1999, followed by a decision in May 1999. The trial on damages was completed, for the most part, in October 1999.

There were no delays. There were no discovery motions. At no time did Vulcan complain of Fata's litigation behavior. That some of Fata's defenses fell by the wayside is of no particular significance. Fata's Stalingrad-like defenses were no more than a response to Vulcan's scorched-earth tactics.

In *Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448, 1461 (Fed. Cir. 1998)(en banc) the Federal Circuit said:

> . . . mere argument that [Plaintiff's] defenses and claims were "baseless" and pursued in "bad faith" does not undermine . . . conclusions to the contrary. The record evidence supports the district court's conclusion that [plaintiff] acted in good faith. Moreover, [plaintiff's] arguments, particularly relating to the claim construction and prosecution history estoppel, were not meritless and resolution of those issues in [defendant's] favor was far from a foregone conclusion.

So, too, here. In *State Industries, Inc. v. A.O. Smith Corp.*, 751 F.2d 1226, 1238 (Fed. Cir. 1985), the Federal Circuit said:

> Merely losing on the defenses of validity and non-infringement is not enough to make a case exceptional.

Fata's defenses were not "baseless." Fata did not defend in "bad faith." Fata's arguments and actions were not "meritless." What Fata did was vigorously defend a lawsuit, and for that there is no good reason for Fata to pay the expenses of Vulcan as the prevailing party.

IV. Conclusion

This case, for all practical purposes, is at an end. With an adjustment in the damages award because of prejudgment interest, discount to present value and cost of money, if appropriate, a final judgment can be entered. After that, if either or both of the parties are dissatisfied with the result, review in the Federal Circuit is available.

The Court regrets the length of time it has taken to conclude the accounting phase. For reasons not altogether clear, for which the Court bears some responsibility, there was no clear focus on the issues necessary to be resolved in this phase of the case. Vulcan was overly enthusiastic in its approach to the loss of profits given the General Motors agreement and its lack of knowledge of the specifics of Fata's bid. Fata's view of the General Motors agreement, on the other hand, was too restrictive and its approach to loss of profits too spartan. The distinctions between infringement by "sale" and infringement by "offer to sell" were not clearly appreciated by Vulcan, Fata, or the Court. Fata urged too limited a review of what constitutes notice, and the issues argued were, as in most patent cases, broader than the realities.

Lastly, the Court is constrained to say, as it has frequently said during the course of this case, that General Motors' failure to appreciate that Vulcan's installations at Saturn and Massena were covered by the '787 patent made for much mischief. Of course, had Vulcan been more assertive, and had Fata better appreciated the United States patent system and the snares and traps which it holds for the unsophisticated, much of the turmoil seen in the case could have been avoided. The lesson to be learned from all of this is that the United States does have a patent system; it is to be respected. When it is not respected, district court judges have an obligation to assure that it is.

s/ Avern Cohn
AVERN COHN
UNITED STATES DISTRICT JUDGE

Dated: AUG 01, 2000
Detroit, Michigan

TELEPHONIC CONFERENCE DATED MAY 9, 2000

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

HONORABLE AVERN COHN

No. 98-CV-74495

VULCAN ENGINEERING CO., INC.,

Defendant,

v.

FATA ALUMINUM, INC., and FATA GROUP, S.p.A.,

Defendants.

TELEPHONIC CONFERENCE

Tuesday, May 9, 2000

* * *

[2] Detroit, Michigan
Tuesday, May 9, 2000
3:35 p.m.

THE COURT: I have been working on a decision on the several issues that are before me and have come to a conclusion on all but one, and I thought it would be well if I gave you my conclusions on the record with the reasons to follow so perhaps with the issues narrowed if there is an opportunity to resolve this matter it can be resolved,

understanding that a resolution would obviate either party's right to appeal. I'm of a view that because of the way the issues expanded that probably expectations are such that it's impossible to come to an agreement.

So I'm going to give you my conclusions in three parts. First I'm going to give you the chronology of relevant events as I understand them, then I'm going to give you a couple of observations, and then I'm going to give you a summary of some findings and conclusions. I will not accept any additional papers. I intend, if the matter is not resolved, to proceed to decision on the papers before me.

This is the chronology of relevant events as I understand them:

[3] 1. February 13, 1997 — General Motors solicits bids, Plaintiff's Exhibit 39.

2. March 10, 1997 — Fata submits its initial bid, DX 446, which reads in part, "Enclosed is our very best offer."

3. July 29, 1997 — Fata revises its quotations, DX 447, DX 448.

4. July 29, 1997 — GM advises Fata it has been awarded the contract.

5. August 6, 1997 — Vulcan writes a letter to GM, DX 426.

6. August 12, 1997 — GM sends Vulcan's letter to Fata, PX 27.

7. August 13, 1997 — GM writes Vulcan including a copy of the letter to Fata, PX 283.

8. August 6, 1997 — GM issues purchase order for Line 1, Plaintiff's Exhibit 56.

9. April 9, 1998 — GM issues purchase order for Line 2, PX 307; Line 3, PX 308; Line 4, PX 309; Line 5, PX 310.

10. September 15, 1998 — Suit filed.

11. Fall 1998 — Line 1 is delivered to General Motors.

12. July 29, 1998 — Decision is filed.

13. July 28, 1998 — Vulcan and GM come to an [4] agreement, DX 450.

14. July 30, 1998 — GM and Fata come to an agreement, DX 449.

There is a difference between the Purchase Order Terms and Conditions on the reverse side of the Purchase Order forms and the Terms and Conditions in the Request for Quotation. The differences are not material.

Vulcan has not articulated a methodology for determining damages on an unsuccessful "offer to sell" proximately caused by a competitor's "offer to sell" and infringing product where the infringer subsequently is licensed to manufacture and deliver the infringing product. Given the uncertainties in determining whether or not the competing offer to sell would ripen into a completed sale, damages appear to be speculative and conjectural and not capable of determination. Moreover, nothing in Vulcan's claim for damages, i.e., its papers in support of its claim for damages, reflect the fact that it is claiming damages on its offer to sell "proximately caused by the competing offer to sell."

This is a summary of the findings and conclusions of the Court:

1. The date of actual notice is August 12, 1997, and is contained in the letter from GM to Fata enclosing Vulcan's letter.

[5] 2. The Fata quotation was an offer to sell of a continuing nature.

3. GM's notification on July 29, 1997, to Fata did not form a contract. There were no funds allocated on the part of GM to the project. Only the issuance of a purchase order creates an obligation on the part of General Motors.

4. The acceptance by Fata of the GM purchase orders constituted infringing acts. They constituted sales. An agreement to sell in the context and circumstances of this case is the equivalent of a sale.

5. There were no reasonable alternatives to the patented system.

6. Whether notice was given on August 12, 1997, or notice was given when suit was filed is not material. Vulcan is entitled to a loss of profits on Line 1 only. The Vulcan/General Motors agreement constituted a license — effectively constituted a license to Fata to sell Lines 2 through 5. At most, Vulcan would be entitled to a reasonable royalty on Lines 2 through 5. A reasonable royalty, if awarded, would not capture the profits Fata made. However, Vulcan has not asserted its right to a reasonable royalty, and as previously noted, the damages under the circumstances here, on the rejection of Vulcan's offer to sell in favor of Fata's offer to [6] sell, are speculative and conjectural given the uncertainty at the time that the purchase orders were issued of there ever being any completion, et cetera.

Lastly, Fata behaved responsibly and in reliance on competent legal opinions when it became aware of the patents. Fata is not guilty of willful infringement, and this is not an exceptional case.

That, gentlemen, is now a matter of record, and I will now proceed to memorialize and flesh out the reasons for these findings as well as determine what Vulcan is entitled to in the way of loss of profits and damages in the sale of Line 1 to General Motors and infringement of Vulcan's patent.

Do any of you have any questions?

MR. MacFARLANE: Not from the defense, Your Honor.

MR. FORMAN: No, Your Honor.

MR. BUESSER: No, Your Honor.

THE COURT: I will accept an exception to the chronology only, but I think I have it accurate.

MR. MacFARLANE: Your Honor, this is Marshall MacFarlane. Is the court reporter present?

THE COURT: Yes.

MR. MacFARLANE: So we can get a copy of this?

[7] **THE COURT**: Yes. She'll do it on an expedited basis.

MR. MacFARLANE: Excellent. I think I heard one or two errors, but I think we'll all agree on the errors.

THE COURT: I think you can. One of the difficulties here is the interposition of plaintiff's exhibits and defendants' exhibits and some lack of meticulousness when referencing a particular document to getting the exhibit number exactly right, et cetera, but that's understandable and I did not go back to the exhibit lists themselves in working these things out.

Thank you.

MR. MacFARLANE: Thank you, Your Honor.

MR. FORMAN: Thank you, Your Honor.

(Proceedings concluded at 3:45 p.m.)

* * * *

AMENDED OPINION OF THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF MICHIGAN, SOUTHERN DIVISION DATED AUGUST 10, 1999

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

CASE No. 98-74495

HONORABLE AVERN COHN

VULCAN ENGINEERING CO., INC.,

Plaintiff,

v.

FATA ALUMINIUM, INC., and FATA GROUP S.p.A.,

Defendants.

AMENDED OPINION*

* * *

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* This Amended Opinion is a revision and enlargement of the Court's bench opinion of May 21, 1999, and it incorporates the corrections set forth in the Errata filed August 10, 1999.

TABLE OF CONTENTS

Page

I. INTRODUCTION ..... [77a]

A. Nature of the Dispute ..... [77a]

B. The Claim-In-Issue ..... [78a]

C. Trial/Post Trial ..... [79a]

D. Decision ..... [80a]

II. BACKGROUND ..... [81a]

A. Casting ..... [81a]

1. Traditional Casting Art ..... [81a]

2. Lost Foam Casting ..... [81a]

3. Traditional Casting Systems ..... [82a]

a. Accumulating Systems ..... [82a]

b. Non-accumulating Systems ..... [83a]

4. Conventional Wisdom in the Lost Foam Casting Industry Prior to 1987 ..... [83a]

B. McMellon's Efforts ..... [85a]

1. Prior to 1987 ..... [85a]

2. Saturn ..... [86a]

3. Commercial Success ..... [87a]

TABLE OF CONTENTS (continued)

Page

C. Saginaw ..... [87a]

1. General Motors Inquiry ..... [87a]

2. FATA ..... [91a]

III. THE '787 PATENT ..... [92a]

A. Claim 1 ..... [93a]

B. Compaction Station ..... [94a]

C. References ..... [95a]

IV. THE CASE IN COURT ..... [96a]

A. Proceedings Prior to Trial ..... [96a]

1. Request for Preliminary Injunction ... [96a]

2. Markman Hearing ..... [97a]

3. Motion for Summary Judgment ..... [97a]

B. The Trial ..... [97a]

1. Overview ..... [97a]

2. Vulcan's Witnesses ..... [98a]

3. FATA's Witnesses ..... [99a]

4. Exhibits ..... [100a]

TABLE OF CONTENTS (continued)

Page

5. Testimony .....[100a]

6. Absence of Testimony .....[101a]

V. VALIDITY .....[101a]

A. Anticipation .....[102a]

B. Obviousness .....[102a]

1. Prior Art .....[104a]

a. Rochester Products .....[104a]

b. Fredonia .....[105a]

c. John Deere .....[105a]

2. FATA's Argument .....[106a]

3. Secondary Considerations .....[109a]

4. Conclusion .....[110a]

C. Enabling .....[111a]

1. FATA's Argument .....[112a]

2. Discussion .....[112a]

3. Conclusion .....[113a]

TABLE OF CONTENTS (continued)

Page

VI. INFRINGEMENT .....[113a]

A. Legal Principles .....[115a]

B. Track Means .....[116a]

C. Registration Means .....[119a]

D. Drive Means .....[121a]

1. The '787 Patent .....[121a]

2. Saginaw .....[123a]

3. Comparison .....[124a]

4. Conclusion .....[127a]

VII. CONCLUSION .....[128a]

I. INTRODUCTION

A. Nature of the Dispute

This is a patent case involving a claim of infringement and a counterclaim of invalidity. Also involved are ancillary claims of false representations and unfair competition by plaintiff.

The patent in suit, United States Patent No. 4,736,787 (the '787 patent) (Px1), issued on April 12, 1988, to Bruce McMellon (McMellon) based on an application dated June 29, 1987. The '787 patent is assigned to plaintiff Vulcan Engineering Co. (Vulcan) and covers a lost foam handling system, which is better described as an interconnected, continuously-linked lost foam casting system.

Vulcan claims that defendants FATA Aluminium, Inc., a Delaware corporation with offices in Michigan, and FATA Group, S.p.A., an Italian corporation, headquartered in Turin, Italy (collectively FATA), have infringed the '787 patent in the offering, manufacture, and sale of a lost foam casting system to General Motors Corporation (General Motors) for its Saginaw, Michigan foundry (Saginaw). 35 U.S.C. § 271. Vulcan also claims that FATA's assertions in commercial promotions and advertisements that it designed and engineered the system it sold to Saginaw are false, have hurt Vulcan's reputation, and have created confusion in the marketplace. 15 U.S.C. § 1125(a), Lanham Act, § 43(a).

FATA denies infringement and claims that the '787 patent is invalid and unenforceable because of anticipation and obviousness, because its disclosure is non-enabling, and because it omits two indispensable objects of the invention. 35 U.S.C. §§ 102, 103, 112. FATA also claims Vulcan is guilty of "unclean" hands and states it will assert such a defense should Vulcan prevail in its infringement claim and seek an injunction.

B. The Claim-In-Issue

By agreement of the parties, Vulcan's claim of infringement is limited to Claim 1 of the '787 patent, and FATA's counterclaim of invalidity is also so limited. Claim 1 reads:

1. In a lost foam casting system,

2. a closed curvilinear track means having

3. a loading and compaction station,

4. a metal pouring station, and

5. a mold unloading system;

6. a plurality of flask carrying gondolas

7. supported for movement along the track means

8. with each gondola including means for registering said flask thereon for alignment in said compaction station, and

9. with each of said gondolas being pivotally connected to each adjacent gondola;

10. drive means for effecting intermittent movement of the mold carriers between indexed positions along said track means;

11. a plurality of mold forming flasks

11a. adapted for registry in said gondolas, and

11b. detachably supported thereon.

C. Trial/Post Trial

The case was tried to the Court over seven days in March 1999. Following trial, the parties filed proposed findings of fact and conclusions of law, as well as post-trial briefs. These filings were followed by oral argument.

FATA has filed a post-trial paper styled "Defendants' Statement of Objections to Claim Construction Findings." Because the objections are merely a belated effort to gain reconsideration of the *Corrected Order on Claim Construction* filed March 3, 1999 (attached as Exhibit A), the *Memorandum on Claim Construction* filed March 4, 1999 (attached as Exhibit B), and the *Order of Corresponding Structures* entered March 10, 1999 (attached as Exhibit C), as well as a contradiction of FATA's representations to the Court as to its defenses to the claim of infringement at the final pretrial conference on March 4, 1999 (Tr. 3/4/99, pp. 22-23, 37-38), no consideration will be given to the paper. *See* E.D. Mich. L.R. 7.1(g)(3).[1] Claim construction is not a work in progress. Claim construction should be reconsidered if subsequent proceedings or the trial record reveals aspects not apparent at the time of the initial decision. This has not happened here.

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1. Under E.D. Mich. L.R. 7.1(g)(3):

> Generally, and without restricting the court's discretion, the court will not grant motions for rehearing or reconsideration that merely present the same issues ruled upon by the court, either expressly or by reasonable implication. The movant must not only demonstrate a palpable defect by which the court and parties have been misled but also show that correcting the defect will result in a different disposition of the case.

FATA has also filed a paper styled "FATA's Motion For Judgment as a Matter of Law on Count II - Unfair Competition/ False Advertising." This Opinion does not cover Vulcan's claims of false representations and unfair competition or FATA's defenses. Consideration will be given to these matters at a later date.

D. Decision

For the reasons that follow, which constitute the findings of fact and conclusions of law required by Fed. R. Civ. P. 52, the Court finds for Vulcan. FATA did not overcome the presumption of validity that attaches to an issued patent by establishing with clear and convincing evidence that the '787 patent is invalid. *See* 35 U.S.C. § 282; *Applied Materials, Inc. v. Advanced Semiconductor Materials America, Inc.*, 98 F.3d 1563, 1569-70 (Fed. Cir. 1996), *cert. denied*, 520 U.S. 1230 (1997). FATA did not introduce evidence of prior art containing the limitations of Claim 1 of the '787 patent. McMellon's invention was not obvious, and the specification is sufficient to teach one skilled in the art how to make and use the claimed invention. Likewise, the disclosure did not omit any indispensable elements of the claimed invention.

Further, Vulcan established by a preponderance of the evidence that the lost foam casting system that FATA sold to Saginaw infringes the '787 patent. Vulcan satisfied its burden to establish that the limitations of Claim 1 of the '787 patent, properly construed as to scope and meaning, are found in the lost foam casting system FATA sold to Saginaw. Because the issue at trial with regard to infringement was the structure of the three means-plus-function limitations of Claim 1, Vulcan satisfied the Court that either the structures disclosed in the specification or their equivalents were incorporated in the lost foam casting system FATA sold Saginaw. In other words, "the differences between the structure in the accused device and any disclosed in the specification are insubstantial." *Chiuminatta*

Concrete Concepts, Inc. v. Cardinal Indus., Inc., 145 F.3d 1303, 1309 (Fed. Cir. 1998).

II. BACKGROUND

A. Casting

1. Traditional Casting Art

Casting, or forming articles from molten metals using molds, is an old art form. In general, a casting operation involves three steps, or stations: a compaction station (mold making station), a pouring station, and a dumping station. At the compaction station, sand is bonded together, or "compacted," around a pattern to form a mold. The pattern is then removed. At the pouring station, molten metal is poured into the mold. After the metal cools to form a casted article, the casted article is removed, or "dumped" in casting parlance, at the dumping station.

"Green sand" casting is the popular name given to a traditional method of casting. In green sand casting, sand bonded with clay and water is placed into a rigid permanent pattern. The bonded sand is then compressed against the pattern to form a cavity in the shape of the pattern. This compaction forces the bonded sand to stick together. Because the pattern must be removed, the mold must be made in two halves: the "cope" is the top half, and the "drag" is the bottom half. After the pattern is removed, the cope and drag are joined together to form the completed mold.

2. Lost Foam Casting

Lost foam casting was invented in 1958 by H.F. Shroyer, United States Patent No. 2,830,343 (Dx 172). In lost foam casting, a polystyrene pattern is compactly buried in a

container, or flask, filled initially with unbonded sand. Unlike green sand casting, however, the polystyrene pattern is not removed at the compaction station. Rather, the sand is compacted around the pattern to form the mold. Shroyer's invention calls for the molten metal to burn out the pattern, hence the term lost foam. The molten metal duplicates the pattern and therefore the casted part is formed by the compacted sand.

There are two sides to the lost foam casting process: the casting, or black side, and the pattern formation, or white side. On the white side, a mold is first constructed with poured polystyrene which then hardens becoming the pattern. The black side includes inserting the pattern in the mold in the flasks, compacting it with sand, pouring in the molten metal which forms into the part as the pattern burns out, and then extracting the formed part from the flask.

3. Traditional Casting Systems

In general, casting systems have incorporated conveyor systems to move the flasks from station to station. The flasks may be placed on carriages, or gondolas, and the conveyor moves the gondola from station to station. The gondolas may or may not be linked together.

a. Accumulating Systems

In non-linked systems, or accumulating systems, the gondolas move independently from each other from one station to the next. The gondolas are able to accumulate ahead of each operating station, allowing each station to operate independently of the other. With an accumulating system, therefore, the time between metal pouring and dumping is not dependent on the time needed to complete the compaction station, which is generally the slowest operating station.

Examples of an accumulating system include roller conveyors, where the gondolas are moved by rollers underneath them, and power-and-free conveyors, which use either a track or overhead rail where each gondola would engage and disengage a drive mechanism.

b. Non-accumulating Systems

Non-accumulating systems, or continuously-linked systems, were used in foundries for casting as early as 1941. *See* United States Patent No. 2,347,346, issued to F.J. Wright for a conveyor mechanism (Wright, '346 patent) (Px4). In these systems, which are still in use today, only the pouring and dumping stations are "online," or on the conveyor; the mold is formed at an "offline" compaction station. After the mold is formed, it is placed on a gondola that is moved from station to station, called indexing. The conveyor carries the gondola to the metal pouring station, and then through a cooling zone to the dumping station.

There have been many variations in the manner in which the gondolas move from station to station. What was common to all continuously-linked casting systems prior to 1987, however, was the singular fact that compaction was done offline. No continuously-linked system had all operating stations located on a single conveyor.

4. Conventional Wisdom in the Lost Foam Casting Industry Prior to 1987

Lost foam casting as initially practiced was less efficient than traditional casting methods because the compaction operation took much longer to complete. Indeed, the lost foam process was little utilized before General Motors adopted an accumulating system for use in its Massena, New York facility in 1979.

Prior to June 29, 1987, the conventional wisdom and engineering consensus in the industry was that, to have a viable lost foam casting system with all operating stations online, an accumulating system was necessary.[2] It was thought that accumulating systems allowed for the maximum production rate. Also, there was a concern that a delay in dumping could affect the quality of the casted part. All prior art identified at trial utilized accumulating systems.

Accumulating systems were complex mechanical structures that had many drives, motors, sensors, and other equipment to move the non-linked flasks from one location to the next. As such, accumulating systems required substantial downtime for maintenance, which was expensive and limited production. Prior to 1987, there were no lost foam production systems in existence that utilized a continuously-linked flask handling system like that claimed in Claim 1 of the '787 patent.

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2. As explained in V.H. Burchell, *Production Systems for Lost Foam Castings*, Metalurgical Science & Technology, 30-1, 30-4 (1983) (Px145):

> The transportation system must have the ability to convey the flasks or 'pour-boxes' to the individual process stations, and be capable of 'accumulating' or 'queuing' them ahead of the operating stations. It is also desirable that the system allow free access to the top and sides of the flask to aid in pattern placement, pouring, and cast-cluster removal. There are many types of systems which will satisfy the requirements, but the simplest mode of transport is based on a power-and-free conveyor.

The same article is published in Volume 92 of *Transactions of the American Foundrymen's Society* (1984).

B. McMellon's Efforts

Vulcan is in the business of manufacturing metal casting systems, including lost foam casting systems. McMellon joined Vulcan in 1984 as a vice president and is now its chief operating officer. McMellon was and continues to be responsible for management, sales, marketing, process analysis, and engineering coordination of projects at Vulcan.

1. Prior to 1987

Around the summer of 1986, McMellon began exploring ways to improve the efficiency of existing lost foam casting systems by creating a simple, rugged, and dependable system with minimal downtime. McMellon's efforts looked to the creation of a continuously-linked lost foam casting system in which existing technology was appropriately modified. Vulcan already manufactured a conveyor based on United States Patent No. 4,299,269, issued to Friesen, *et al.* (Friesen, '269 patent) (Px6), for a handling system for foundry sand molds in which "[a]n intermittently moving gondola-type conveyor for handling pallet-supported foundry sand molds" moved along tracks. *See also* Wright, '346 patent (Px4).

Essentially, McMellon developed a way of placing the compaction station online on a continuously-linked conveyor system. This was the first time all operating stations were placed online. As McMellon testified:

THE COURT: So what you did in reality is . . . figured out how to get the compaction station online?

THE WITNESS [McMellon]: On an interlinked gondola carrier system, yes.

. . .

THE COURT: [S]o when the patent office examiner was looking at all of this stuff, he could have found everything in the prior art except the compaction station online more or less[?]

THE WITNESS
[McMellon]: More or less.

Tr. II, p.64-65.

The first evidence of record of McMellon's development efforts is a drawing dated December 23, 1986, displaying the "General Arrangement Automatic Flask Handling Line" for Simsco Columbiana (Simsco) (Dx96). Simsco, a customer of Vulcan, had ordered an accumulating system that called for an overhead monorail to handle the flasks. Vulcan persuaded Simsco to accept a continuously-linked casting system with all operating stations online (Dx95).

2. Saturn

About the same time McMellon was selling Simsco his new casting system, the Saturn Division of General Motors (Saturn) solicited proposals for a metal casting system for a new automobile assembly plant in Spring Hill, Tennessee. Phase I of the solicitation process looked only to a system denominated "Lost Foam Casting Lines" (Px247). Saturn did not describe the type of conveyor system it desired or specify that the stations be online.

Following submissions by prospective suppliers, including Vulcan and FATA, Saturn went to what it called "Phase II Proposal" (Px248). Once again, Saturn did not particularize the conveyor system that it required or specify that the three stations be online. Saturn said it was looking

for "creativity, innovative cost effective ideas, management flexibility, quality and reliability of equipment" (Px248) (*See also* Dx263, 264, and 265).

By the end of January 1987, in response to Saturn's Phase II request, Vulcan submitted a proposal for a continuously-linked lost foam casting system (Px190). Saturn issued a purchase order for three of Vulcan's casting systems in April 1988. *See* McMellon, Tr. I, p. 103; Tr. VII, p. 51.

3. Commercial Success

Vulcan began marketing the lost foam casting system claimed by the '787 patent under the trade name "TruFoam." General Motors purchased six additional TruFoam systems from Vulcan after Saturn purchased three TruFoam systems. Since January 1, 1987, Vulcan has dominated the market for lost foam casting systems. Vulcan has sold thirty-three TruFoam systems, representing about eighty percent of the forty-one production lost foam systems sold worldwide during the relevant time period. In the United States, Vulcan's sales of TruFoam systems represent ninety-five percent of the lost foam systems purchased since 1987. *See* Px33, Px219, Px220.

C. Saginaw

1. General Motors Inquiry

On February 13, 1997, General Motors issued an inquiry (Px38) for nine separate lost foam casting systems, most of which were to go to Saginaw, "in order to produce block and cylinder heads castings." The specification stated in part:

1. The pour box, flask handling system will be a synchronous, positive indexing, palletized type

conveyor system. Roller conveyors or power-and-free conveyors will not be acceptable.

2. The index system will consist of a hydraulically actuated cylinder with accel. and decl. control on the movement.

. . .

4. The system must have a positive locating and locking device to maintain line location control at all times.

Px38, Section 4.1. As far as Vulcan knew, only TruFoam met these requirements, and as far as Vulcan was concerned TruFoam was the '787 patent. Alfredo Dal Pan (Dal Pan), Technical Director of FATA (Italy), and Giorgio Donini (Donini), General Manager of FATA (US), had seen the Vulcan system installed at Saturn prior to the February 1997 inquiry from General Motors. See Dal Pan, Tr. VI, p. 134; Donini, Tr. III, pp. 33-36. Dal Pan, who was involved in design of the casting line sold to Saginaw, testified:

Q. Did you follow the specifications that GM gave you to build the system?

. . .

A. I followed the specification that GM gave us which indicated the type of conveyor they wanted, the type of conveyor GM wanted.

THE COURT: [T]he first time you saw what GM wanted was in Plaintiff's Exhibit 38; is that correct? . . . [I]ts General Motors Power Train Specification for the design and build of the lost foam casting line February 13. . . .

THE WITNESS: Si.

THE COURT: Were you the first at FATA from a technical standpoint to consider this?

THE WITNESS: Yes, sir.

THE COURT: Okay. And you read 4.0, Scope of Work, and you read 4.1. "The pour box flask-handling system will be a synchronous positive-indexing palletized-type conveyor system. Roller conveyors or power-and-free conveyors will not be accepted." . . . At the time you read that had FATA ever assembled a system that met that specific requirement . . . for lost foam?

THE WITNESS: No.

THE COURT: So this was something new to FATA?

THE WITNESS: As a construction, yes.

THE COURT: As a construction. Were you aware whether or not worldwide there was any lost foam casting system in which the pour box flask-handling system was a synchronous, positive-indexing, palletized-type conveying system?

THE WITNESS: Yes.

THE COURT: You knew there was one. Where?

THE WITNESS: In Saturn.

THE COURT: At Saturn. So you were aware that what GM was calling for was the system that Vulcan had installed at Saturn?

THE WITNESS: As far as conceptually, it was similar to the system that was built by Vulcan.

Dal Pan, Tr. VI, pp. 132-134.

General Motors received bids on the project in July 1997. On August 1, 1997, General Motors advised Vulcan that the nine lost foam casting lines would be awarded to FATA.

McMellon wrote a letter to General Motors dated August 6, 1997, in which he stated that Vulcan "must officially protest the award" to FATA because "[t]he inquiry specifically described systems incorporating the design known as the TruFoam, which is proprietary to and patented (no. 4,736,787) by Vulcan." General Motors forwarded McMellon's letter to FATA on August 12, 1997, stating that "[w]e trust you will look into, and take care of, this matter" (Px27).

2. FATA

As noted, FATA did not sell a continuously-linked lost foam casting system until its sale to Saginaw. Dal Pan testified:

> Q. [D]id you not testify that FATA had never before manufactured a lost foam casting system like the one that they have now sold to GM Saginaw?
>
> . . .
>
> A. Yes.

Tr. VI, p. 108. Indeed, until FATA bid on the Saginaw system, FATA sold the same system it proposed in response to Saturn's Phase II request, which was a casting system in which the compaction station was offline (Dx266).[3]

FATA showed the continuously-linked lost foam casting system it was selling to General Motors at an open house for its prospective customers on September 1, 1998. On September 15, 1998, after McMellon received a report on the system FATA displayed at the open house, Vulcan filed this lawsuit.[4]

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3. *See* Dx267, 268 and 269B, which are drawings of the casting systems proposed by FATA to Saturn. This system is best described in a presentation FATA made to the XVII Foundry Congress of the National Foundry Association in September 1984 in Italy, *Systems And Machinery For the Production of Castings Using Expendable Models Made of Expended Polystyrene* (Dx245A).

4. As discussed below, FATA limited its infringement defense to comparing its structure to the corresponding structure in the '787 patent regarding the track means, registration means, and drive means. A detailed description of the relevant structures of the accused device is set forth in the Court's infringement analysis below.

III. THE '787 PATENT

The '787 patent, particularly Claim 1,[5] describes a conveyor system for lost foam casting that has all of the operating stations online, including the compaction station.[6] A hydraulic ram mechanism moves the continuously-linked gondolas intermittently through indexed positions at each station along the conveyor track. The gondolas carry flasks that are registered on the gondola so that they are in proper alignment at each of the stations. The flasks move through three stations. At the first station — the compaction station — the mold is formed and foundry sand is inserted in the flask and compacted around a polystyrene pattern. At the second station — the pouring station — molten metal is poured into the flask. At the third station — the dumping station — the solidified cast and sand are dumped out. The system is computer controlled and uses conventional lost foam casting equipment.

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5. The '787 patent includes 19 claims overall, with Claim 1 and Claim 14 being independent.

6. As described in its Abstract, the '787 patent covers:

> A conveyor system for use in a lost foam casting system connects a plurality of stations where operations necessary to the process are carried out. The system utilizes an interconnected train of open frame gondolas supported on a set of elevated parallel horizontal rails forming a closed loop. The gondolas each support a flask wherein molds are placed and sand molds are compacted, with the flasks being removable from the gondolas as necessary for the particular operation. A programmable controller senses the status of the system and provides signals to operate the conveyor and associated components.

A. Claim 1

Claim 1, the claim-in-issue, has 11 limitations, three of which are of concern here:

Limitation 2: A closed curvilinear track means.

Limitation 8: With each gondola including means for registering said flask [on the gondola].

Limitation 10: Drive means for effecting intermittent movement of the mold carriers between index positions along said track means.

Each is a means-plus-function limitation. *See* 35 U.S.C. § 112, ¶ 6. The Court construed these limitations as follows:

> Limitation 2 is any type of closed curvilinear track, including parallel rails or monorail.
>
> Limitation 8 requires that each gondola include structure which cooperates with structure, on a flask to register the flask for alignment with the compaction station, including, but not limited to, two posts and two receptacles, regardless of whether the posts or receptacles are located on the gondola or flask. The limitation relates to a method of adjusting the flask in relation to the gondola to assure constant alignment throughout the passage of the flask through the operating stations of the system. The limitation does not relate to engagement between the flask and compaction equipment. The registration assures that each time the flask is lifted from the gondola, it is placed back on the gondola in the exact same relationship.

> Limitation 10 is a hydraulically driven carriage or Geneva movement to engage one gondola and move the entire continuous train of gondolas about the track and stop the train with gondolas in the operating stations, with stops and movement responsive to a controller.

See Corrected Order on Claim Construction; Memorandum on Claim Construction.

The corresponding structure, 35 U.S.C. § 112, ¶ 6, for each of these limitations is described in the *Corrected Order of Corresponding Structures.* Attached as Exhibits D, E, and F are charts displaying Limitations 2, 8, and 10. The charts include the Court's construction, the corresponding structure as described in the specification, as well as the corresponding structure for the casting system FATA sold Saginaw.

B. Compaction Station

Also relevant to the decision is Limitation 3 of claim 1, "a loading and compaction station." The specification and drawings of the '787 patent call for a vertical compactor, i.e., a compactor which engages the flask from below. *See* Fig. 3; col. 3, lines 3-6. It is important to point out, however, that the specification states:

> [T]he equipment available for use in the compaction station 12 is available from a variety of vendors and each type engages the flask 22 in a different manner. Therefore, a specific flask configuration will be discussed herein *as an example* of a flask 22 having features which allow it to be used in the present system.

Col. 2, lines 63-68 (emphasis added). In 1986 vertical and horizontal compactors were commercially available.[7] Hence the Court construed the limitation "a loading and compaction station" as follows:

> [A]ny loading and compaction station which was known in the art on June 29, 1987 (the filing date of the '787 patent) including vertical, horizontal and other compactors.

C. References

The references cited in the '787 patent are:

- The Wright, '346 patent (Px4);
- United States Patent No. 3,565,239 issued to Walker, *et al.*, on February 23, 1971, covering a dishwashing machine with continuous horizontal conveyor means (Px5);
- The Friesen, '269 patent (Px6);
- United States Patent No. 4,402,393 issued to William C. Kent on September 6, 1983, covering a conveyor system, including a number of closely spaced pallets (Px7).

None of these references disclose a metal casting system in which all of the stations are online. One reference discloses flask/carrier registration in the manner called for by the '787 patent and particularly Claim 1.

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7. For example, Outboard Marine Corporation manufactured and, through licensees, supplied horizontal compactors for use in foundry operations, and General Kinematics Corporation supplied vertical compactors for use in foundry operations.

IV. THE CASE IN COURT

A. Proceedings Prior to Trial

1. Request for Preliminary Injunction

Vulcan filed suit in the Northern District of Alabama on September 15, 1998. Almost simultaneously with the filing of suit, Vulcan asked for a preliminary injunction, taking the position that FATA had simply copied Vulcan's Saturn installation in response to Saginaw's solicitation for bids. The case was transferred to the Eastern District of Michigan on FATA's motion before consideration of the motion for preliminary injunction.

The Court conducted a one-day hearing on the motion on November 2, 1998. Because the casting system sold by FATA to Saginaw was not likely to go online for several months, the Court decided that prudence called for an early trial date. If improvidently granted, a preliminary injunction in a patent case can have adverse effects too great to be rectified because the enjoined party must look to an injunction bond or an action for damages to compensate for any loss suffered. Subsequently, the parties agreed that no additional casting systems would be delivered by FATA to Saginaw until a decision on liability.

As is its custom, the Court bifurcated liability from willfulness and damages, believing at the time that the liability issue would be resolved by a jury's decision and that determining liability was as much as should be asked of a jury at trial. The demand for jury trial was later waived, however.

2. *Markman* Hearing

The Court conducted a *Markman* hearing on January 15, 1999. *See Markman v. Westview Instruments, Inc.*, 52 F.3d 967 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). The results of that intensive effort are memorialized in the orders and memorandum previously discussed and attached as Exhibits A, B and C. Claim 1 as properly construed is described in these exhibits as well as Exhibits D , E, and F.

3. Motion for Summary Judgment

During the course of the *Markman* hearing, FATA attempted to abort the trial by moving for summary judgment on Vulcan's claim of infringement. The Court denied the motion and did not meaningfully consider it because it was excessive. Complex patent cases are best resolved in the crucible of trial. Paper and lawyer arguments are not of the same quality as testimony and an orderly presentation of exhibits.

B. The Trial

1. Overview

The case was tried to the bench. The Court allotted 22 hours of trial time to each side, though the trial was completed in 22 hours overall. Preliminarily, the Court denied several motions in limine filed by FATA. The motions seemed excessive in light of the fact that the trial was to be to the Court. Each party filed a glossary of terms. Each party presented its direct testimony in narrative form. *See Manual for Complex Litigation* § 22.51 (3d ed. 1995). Comprehensive exhibit lists were filed. Witness lists included a brief description of the proposed testimony of each witness. The Court required that exhibits be lodged with the Court as each witness testified.[8]

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8. In hindsight, the Court should have required a full set of exhibits be lodged with it in advance of trial.

2. Vulcan's Witnesses

Testifying for Vulcan in its case in chief and rebuttal both live and by deposition were:

- Bruce McMellon — the inventor
- Harry E. Littleton — Engineering Supervisor in the Material Science and Engineering Department at the University of Alabama - Birmingham, an expert in the art of lost foam casting
- Michael Long — a FATA employee who participated in the circumstances leading to the Saginaw order
- Russell J. VanRens — an Outboard Marine Corporation (OMC) employee in research and development who had experience in lost foam casting prior to Bruce McMellon's invention (OMC held the patent initially on a horizontal compactor)
- Alfredo Dal Pan — Technical Director of FATA (Italy) and involved in design of the casting line sold to Saginaw
- Richard Grauer — a patent law expert

3. FATA's Witnesses

Testifying for FATA in its case in chief both live and by deposition were:

- Giorgio Donini — General Manager of FATA (US)
- Marzio Raveggi — Chief Executive Officer of FATA (US)
- Gregory Sanders — an independent consultant in the lost foam industry and a former General Motors employee
- Donald Caron — a retired Saturn employee

  Parker Stroom — Technical Director of Vulcan and a former Saturn engineer
- Lynn Hackman — a sales engineer for Vulcan
- Robert Bond — a sales engineer for General Kinematics Corporation, a manufacturer of compaction equipment for the foundry industry
- Paul Creed — a Vulcan employee familiar with Vulcan's sales to Saturn of the system and a prior installation of Vulcan at Simsco

- Alfredo Dal Pan — Technical Director of FATA (Italy) and involved in design of the casting system sold to Saginaw
- Donald Wood — a patent law expert
- Murray Patz — a consultant in lost foam casting technology particularly in the mold and pattern-making aspects

4. Exhibits

Exhibits at trial included patents, models, photographs, drawings, animated videos, videos of foundry operations, display boards, literature, contract documents, quotations, specifications, and the like.

5. Testimony

Trial testimony and exhibits comprehensively described the history of casting metal parts, including the progression from individually cast parts of iron and aluminum through automation of the casting process. The advantages and disadvantages of compactors in horizontal and in vertical configurations (Dx26 and Dx27) were described. The parties also explicated the manner in which the flask registers with the gondola in the preferred embodiment of the '787 patent (Px215) and in the system sold by FATA to Saginaw (Px216), as well as pouring and extraction equipment, the two drive systems, and the conveyors (Px217 and Px218). In all, little about metal casting and its progress from individually formed molds and patterns to fully automated, green sand, and lost foam was outside of the range of testimony and exhibits when the trial concluded.

6. Absence of Testimony

Particularly significant was the absence of any testimony from a person with experience in lost foam casting currently working at Saginaw or even in any foundry. Saginaw personnel chose FATA over Vulcan to install five new lost foam casting lines, but its persons with procurement experience who can best compare any advantage Saginaw was looking for in the casting system it purchased did not testify. There was no evidence, testimonial or written, relating to the differences in foundry operations between a lost foam casting system following the precepts of Claim 1 and the lost foam casting system that FATA sold Saginaw.

V. VALIDITY

A patent is presumed to be valid. *See* 35 U.S.C. § 282. FATA contends that the '787 patent is invalid on grounds of anticipation, 35 U.S.C. § 102, obviousness, 35 U.S.C. § 103, and failure of enablement and written description, 35 U.S.C. § 112. To overcome the presumption of validity, FATA must prove that the '787 patent is invalid by clear and convincing evidence. *See Applied Materials, Inc. v. Advanced Semiconductor Materials America, Inc.*, 98 F.3d 1563, 1569-70 (Fed. Cir. 1996), *cert. denied*, 520 U.S. 1230 (1997).

"It is well-established that the first step in any validity analysis is to construe the claims of the invention to determine the subject matter for which patent protection is sought." *Smiths Indus. Med. Sys., Inc. v. Vital Signs Inc.*, __ F.3d __, __, 1999 WL 498219, at *4 (Fed. Cir. July 14, 1999). As noted, this exercise is memorialized in Exhibits A, B, and C.

A. Anticipation

FATA's claim that the '787 patent is invalid under 35 U.S.C. § 102 because prior art anticipates the invention claimed has no merit.[9] "A prior art reference anticipates a claim only if the reference discloses, either expressly or inherently, every limitation of the claim." *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997). FATA did not introduce evidence of prior art that contains the limitations of Claim 1 of the '787 patent. Indeed, Donald Wood, who testified as an expert witness for FATA, admitted on cross-examination that FATA had no prior art that anticipated any claim of the '787 patent. *See* Wood, Tr. VI, p. 42.

B. Obviousness

FATA also asserts that the '787 patent is invalid on grounds of obviousness. Under 35 U.S.C. § 103(a):

> A patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

The Court must "determine whether the claimed invention would have been obvious as a legal matter, based

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9. In part, 35 U.S.C. § 102 provides:

> A person shall be entitled to a patent unless . . . the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent[.]

on underlying factual inquiries including: (1) the scope and content of the prior art, (2) the level of ordinary skill in the art, (3) the differences between the claimed invention and the prior art, and (4) secondary considerations of non-obviousness." *Smiths Indus.*, __ F.3d at __, 1999 WL 498219, at *6 (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966)). In so doing, care must be taken to avoid using "the claims . . . as a frame, and [employing] individual, naked parts of separate prior art references . . . as a mosaic to recreate a facsimile of the claimed invention." *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1552 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). To do so would be to use "hindsight gleaned from the invention itself." *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143 (Fed. Cir. 1985) (citing *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577 & n.14 (Fed. Cir. 1984)). As recently stated by the Federal Circuit:

> [T]here is no basis for concluding that an invention would have been obvious solely because it is a combination of elements that were known in the art at the time of the invention. Instead, the relevant inquiry is whether there is a reason, suggestion, or motivation in the prior art that would lead one of ordinary skill in the art to combine the references, and that would also suggest a reasonable likelihood of success. Such a suggestion or motivation may come from the references themselves, from knowledge by those skilled in the art that certain references are of special interest in a field, or even from the nature of the problem to be solved.

Smiths Indus, __ F.3d at __, 1999 WL 498219 at *7 (citations omitted).

1. Prior Art

There was no dispute at trial as to the level of ordinarily skill in the art. It was also uncontroverted that: General Motors installed an automated, accumulating lost foam casting line in Massena, New York, using an overhead power-and-free conveyor in 1979; prior to June 29, 1987, automated, continuously-linked conveyors with pouring and dumping stations online were used in green sand casting; and similarly configured accumulating lost foam casting lines were in use prior to June 29, 1987. There was also no dispute that, on June 29, 1987, an interconnected, continuously-linked lost foam casting line as called for by Claim 1 of the '787 was not found either in the literature or on the foundry floor.

With regard to obviousness, the basic disputes were over what was prior art, the differences between the prior art and Claim 1, and what a person skilled in the art might conclude from all this. FATA attaches significance to the lost foam systems at General Motors' Rochester Products facility in Rochester, New York (Rochester Products), the Fredonia Foundry in Wisconsin (Fredonia), and John Deere Company (John Deere).

a. Rochester Products

The Rochester Products system consisted of a large turntable that carried eight flasks to the three stations by indexed movement. *See* Dx104, 105, 106. The underside of each flask had three posts placed into openings in the table so that they could be connected with three upstanding pedestals located in or underneath the compactor. The system did not use pivotally-mounted gondolas and did not have a track.

The system was experimental and not used in production. Apparently it was assembled in-house, used for a short period of time, and then abandoned. McMellon was not aware of this system. This system is not prior art because of its experimental and secret nature. Moreover, nothing in Rochester Products suggests or teaches the invention claimed in the '787 patent or in combination with the other cited art.

b. Fredonia

Fredonia's system, a conventional power-and-free accumulating system, had open frame, four-wheeled trollies, carrying flasks traveling about a closed loop of two tracks. *See* Dx338. The flasks had downwardly-extending tubular feet such that they could be aligned with vertical compaction equipment underneath the track. The trolleys were driven by a continuously-moving chain that provided intermittent movement. The three stations were online. The trolleys were not linked and some moved while others were stationary. There is nothing in Fredonia that teaches or suggests the invention claimed in the '787 patent individually or in combination with the other cited prior art.

c. John Deere

John Deere, an accumulating system which was manufactured by Vulcan in the summer of 1986, was a closed-loop roller conveyor with the three stations online. *See* Dx109, 111, 112. The system had twenty-five flasks moving through the three stations in platoons of five each. The system included indexing and accumulation because the flasks moved individually and in groups of five. The system included vertical compaction with a roller conveyor for carrying the flasks. The flasks rested directly on the rollers; there was no separate gondola or flask carrier. Thirty-two separate drives powered the flasks. A multitude of limit switches were needed to relay information from the rollers so the flasks did not bump into each other.

McMellon testified as to John Deere:

> In 1986 Vulcan received a purchase order from John Deere to provide a powered roller conveyor lost foam casting system. As I have described in this system, the flasks were not connected in any manner and did not ride on any type of carrier. The flasks sat directly on the rollers. The flasks were flat-bottomed. This system had 32 separate drives to allow the flasks to move independently around the roller conveyor and had numerous limit switches to be able to locate the flasks and prevent them from running into each other. The John Deere system never really operated as a production system and is no longer in service.

McMellon, Tr. I, p. 92. There was nothing in John Deere which suggests or teaches the invention claimed in the '787 patent individually or in combination with the other cited prior art.

2. FATA's Argument

FATA urges that the prior art references it cited would have lead a person of ordinary skill in the art to combine them in the way described in Claim 1. Particularly, FATA's argument as to obviousness is best stated by reference to Paragraphs 137 to 139 of *Defendants' Proposed Findings of Fact Corrected Copy* filed May 14, 1999 (Defendant's Proposed Findings), and Paragraph 45 of *Defendants' Proposed Conclusions of Law* filed May 6, 1999:

> 137. A person skilled in the casting art in 1987 would have found it obvious to look to his own past experiences not only in lost foam systems but in green sand casting as well to find ideas for

designing and/or selecting hardware for use in a lost foam casting operation. It would have been apparent to this person that both operations were highly analogous, both required conveyors to transport molding flasks in high production quantities and that both involved significant off-line operations: in the case of green sand technology this involves preparing the cope and drag and in lost foam technology this involves the manufacture of the styrofoam pattern.

138. The person of ordinary skill would also be presumed to know, in 1987, that compaction had been done on-line in lost foam systems at Massena, John Deere and Fredonia.

139. The person of ordinary skill in the casting art in 1987 would probably have preferred the more expensive accumulating line if he were trying to design or assemble a conveyor system capable of accommodating several different products. However, if he were attempting to design or assemble a smaller "dedicated" casting line, he would have favored the mechanically interconnected "daisy chain" conveyor.

45. The combination represented by Claim 1, i.e., the prior art conveyor consisting of pivotally interconnected, intermittently driven trolleys with on-line lost foam compaction and dumping stations as were used at John Deere and flask registration structure as was used at Fredonia, is a combination which would have been obvious to a person of ordinary skill in the casting conveyor technology at the time of the invention when faced with the same specific task which faced McMellon at

> Saturn; i.e., to propose an inexpensive conveyor with proven reliability at minimum expense by borrowing from existing technology. The fact that low cost and reliable operation overcame the natural desire for the flexibility of the accumulator conveyor pointed McMellon in the direction of the daisy chain conveyor.

FATA's proposed findings, even if adopted by the Court, are insufficient to carry the day for FATA. First, there is no disagreement as to the need for "significant off-line operations" as stated in Paragraph 137 of *Defendants' Proposed Findings.* As of June 27, 1987, FATA's offline operations, aside from pattern preparation, included loading and compaction.

Second, the preference for a conveyor system capable of accommodating several different products in a small, dedicated casting line, including a mechanically interconnected daisy chain conveyor, says nothing about moving the compaction station online. The '787 patent calls for compaction online; neither FATA nor any other manufacturer except Vulcan offered a continuously-linked conveyor with the compaction station online.

Third, no witness of ordinary skill in the art testified that McMellon's combination is the result of common engineering skill. The evidence of record in support of such a conclusion is certainly not clear and convincing. *See Smiths Indus.*, __ F.3d at __, 1999 WL 498219, at *8 ("That knowledge *may* have been within the province of the ordinary artisan does not in and of itself make it so, absent clear and convincing evidence of such knowledge."). The conventional wisdom in the industry was that if all casting stations were to be located on a single conveyor, the flasks had to be allowed to move independently of each other and accumulate at the operating stations.

Fourth, there were significant differences between Massena, Fredonia, and John Deere and the invention described in the '787 patent. Each prior art reference cited by FATA was an accumulating system. None of the references individually or in combination suggested the motivation to place the compaction station online and use a continuously-linked conveyor system, as McMellon did. McMellon was looking for a less costly, more efficient, and less complicated way to produce lost foam cast metal parts.

3. Secondary Considerations

Evidence of secondary considerations such as commercial success and copying "may often be the most probative and cogent evidence in the record." *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983). Vulcan has the burden of establishing the commercial success of the '787 patent reduced to practice. In this regard:

> For objective evidence [of nonobviousness] to be accorded substantial weight, its proponent must establish a nexus between the evidence and the merits of the claimed invention. A prima facie claim of nexus is generally made out when the patentee shows both that there is commercial success, and that the thing (product or method) that is commercially successful is the invention disclosed and claimed in the patent.

In re GPAC, Inc., 57 F.3d 1573, 1580 (Fed. Cir. 1995) (citations omitted) (internal quotation marks omitted).

FATA did not counter the evidence that Vulcan's TruFoam system is the invention claimed in the '787 patent. Further, Vulcan established that the TruFoam system was a commercial success. As noted, Vulcan has dominated the

market for lost foam casting systems beginning with the sale to Simsco followed by the acceptance of Saturn. Since January 1, 1987, Vulcan has sold about eighty percent of the lost foam systems purchased worldwide, and ninety-five percent of the lost foam systems purchased in the United States. Vulcan's commercial success is further buttressed by the specifications for Saginaw. Advertising was not a factor.

Vulcan also established copying on the part of FATA. When Saginaw requested a synchronous, continuously-linked casting system in 1997, the only such casting system was being made by Vulcan. Although the Saginaw specification appeared to be generic, it was simply an artful way to describe the casting system claimed in the '787 patent without expressly calling for the successful bidder to be Vulcan or a Vulcan licensee. FATA had never before manufactured such a lost foam casting system similar to the one in the Saginaw specification. *See* Dal Pan, Tr. VI, p. 133. Dal Pan, however, testified that he was aware of such a system at Saturn, which was manufactured by Vulcan. *See* Dal Pan, Tr. VI, pp. 132-34.

4. Conclusion

The conventional wisdom and engineering consensus on June 29, 1987, in lost foam casting was that, if all operating stations were to be located on a single conveyor, an accumulating system had to be used because it allowed the flasks to move independently of each other and to accumulate at the operation stations. This is the reason why no lost foam casting operation used a continuously-linked conveyor system with the compaction station online like that claimed in the '787 patent before Vulcan. *Cf. Monarch Knitting Mach. Corp. v. Sulzer Morat GmbH*, 139 F.3d 877, 885 (Fed. Cir. 1998) ("General skepticism of those in the art . . . is also 'relevant and persuasive evidence' of non-obviousness." (citing *Gillette Co. v. S.C. Johnson & Son, Inc.*,

F.2d 720, 726 (Fed. Cir. 1990)). None of the lost foam prior art discussed above made Claim 1 obvious. Each of the lost foam prior art systems used some form of accumulating system. In each instance the flasks were not linked together and were independent of each other. Additionally, TruFoam, which incorporates the teachings of Claim 1, was a commercial success. The motivation for the purchase of the TruFoam system after Saturn was the installation at Saturn.

Accordingly, in its attack under 35 U.S.C. § 103, FATA did not come close to rebutting the statutory presumption of validity, 35 U.S.C. § 282, that attaches to the '787 patent by establishing that Claim 1 of the '787 patent was invalid by clear and convincing evidence.

C. Enabling

FATA also argues that the '787 patent is invalid under 35 U.S.C. § 112, ¶ 1, which provides in pertinent part:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same. . . .

In *Gentry Gallery, Inc. v. Berkline Corp.*, 134 F.3d 1473, 1478-80 (Fed. Cir. 1998), the only case cited by FATA in support of its § 112, ¶ 1 argument, the Court of Appeals for the Federal Circuit held the claim invalid because it was broader than the disclosure: the disclosure unambiguously limited the location of a control to a console, but the claim was directed to a control outside the console. In turn, Vulcan

cites *PPG Indus., Inc. v. Guardian Indus. Corp.*, 75 F.3d 1558, 1564 (Fed. Cir. 1996), where the Federal Circuit stated that "to be enabling, a specification 'must teach those skilled in the art how to make and use the full scope of the claimed invention without 'undue experimentation,' " and *John Hopkins Univ. v. CellPro, Inc.*, 152 F.3d 1342, 1361 (Fed. Cir. 1998), in which the Federal Circuit noted that enablement requirement is met if the specification "enables any mode of making and using the invention."

1. FATA's Argument

FATA argues that the '787 patent is invalid under § 112, ¶ 1 due to (1) the lack of detail in the specification, i.e., some level of software or programming regarding the programmable microprocessor identified in the '787 patent at col. 1, line 33 and col. 4, lines 48-66, (2) the failure to include as a limitation in Claim 1 the programmable controller, and (3) the failure to include as a limitation in Claim 1 a continuous chain of gondolas. No evidence of record, other than McMellon's acknowledgment of the need for the programmable controller or that a good deal of mathematics is required, is cited in support of the argument. Indeed, minimal text is devoted by FATA to this argument in its papers.

2. Discussion

The Court's construction of Limitation 10 of Claim 1, "drive means for effecting intermittent movement of the mold carriers between indexed positions along said track means" expressly includes "with stops and movement responsive to a controller." *Corrected Order on Claim Construction*, pp. 3-4. The *Order of Corresponding Structures* expressly references a programmable controller in Limitation 10. Murray Patz (Patz), a witness called by FATA who claimed

to be a person of ordinary skill in the art, admitted he knew how the controller system would work. *See* Patz, Tr. VI, pp. 135-136; Tr. VII, pp. 42-43.

Additionally, the specification of the '787 patent expressly describes "a controller which may be a programmable controller." Col. 4, lines 48-63. As to the asserted lack of a continuous claim of gondolas, Limitation 9 of Claim 1 has been construed by the Court to "include any pivotal connection between each adjacent gondola in a closed loop. . . ." This clearly references a continuous chain of gondolas.

3. Conclusion

However looked at, the requirements of 35 U.S.C. § 112 have been met by the specifications and disclosures in Claim 1 of the '787 patent. This case is too important to Vulcan and to FATA for throw-away or truncated argument. FATA has failed to meet its burden to prove by clear and convincing evidence that Claim 1 of the '787 patent is invalid under § 112, ¶ 1.

VI. INFRINGEMENT

At the final pretrial conference, FATA agreed to restrict its defense on the charge of infringement.

> MR. YOUNG [FATA's Counsel]: We are going to defend the infringement charge only on the three means plus function limitations that you have found in each of the two claims. We will not attempt to distinguish on the other limitations. We will address in each of the three means plus function limitations the structural

differences between the corresponding structure in the patent and the actual accused structure. We will limit our proofs to that, and we are prepared to do that. The others we're conceding based on your interpretation. We'll hold out the belief that at least one limitation should have been construed as a means plus function limitation, but that's by us, we're not going to argue that anymore. You've made a decision on that. We're going to go with it.

The only three distinguishing features will be . . . the track means, the registration means, and the drive means [in Claim 1]. There are very substantial structural differences in all three of those areas.

. . .

MR. YOUNG: We will concede that the functions are met. If that were the end of the test, we wouldn't be arguing infringement, but we've got to compare structure and that's where we'll be.

(Tr. 3/4/99, pp. 22-23, 38).

Therefore, the decision on infringement relates to the elements of the track means, the registration means, and the drive means of Claim 1. The Court will compare the structures of the track, registration and drive of the casting system sold by FATA to Saginaw to the corresponding structures described in the specifications.

A. Legal Principles

Under 35 U.S.C. § 271:

> [W]hoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States . . . during the term of the patent therefor, infringes the patent.

The infringement analysis is based on the scope of the claim-in-issue as a measure of the invention and is not confined to the particular mode of use or preferred embodiment described in the specification. *See Transmatic, Inc. v. Gulton Indus.*, 53 F.3d 1270, 1277 (Fed. Cir. 1995).

As noted, the track means, registration means, and drive means limitations are written in means-plus-function form and are subject to the requirements of 35 U.S.C. § 112, ¶ 6, which provides:

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

In the context of § 112, ¶ 6, "[t]he proper test is whether the differences between the structure in the accused device and any disclosed in the specification are insubstantial." *Chiuminatta*, 145 F.3d at 1309. "Functional identity and either structural identity or equivalence are both necessary." *Odetics, Inc. v. Storage Tech. Corp.*, __ F.3d __, __, 1999 WL 455530, at *4 (Fed. Cir. July 6, 1999). More specifically:

> The content of the test for insubstantial differences under § 112, ¶ 6 thus reduces to "way" and "result."

> That is, the statutory equivalence analysis requires a determination of whether the "way" the assertedly substitute structure performs the claimed function, and the "result" of that performance, is substantially different from the "way" the claimed function is performed by the "corresponding structure, acts, or materials described in the specification," or its "result." Structural equivalence under § 112, ¶ 6 is met only if the differences are insubstantial; that is, if the assertedly equivalent structure performs the claimed function in substantially the same way to achieve substantially the same result as the corresponding structure described in the specification.

Id. at *5 (citations omitted).

B. Track Means

Limitation 2 of Claim 1 claims "a closed curvilinear track means." The corresponding structure in the '787 patent is a closed curvilinear pair of rails. The function of the track is to provide a closed loop upon which gondolas ride through the lost foam operating stations. FATA conceded that its track performs the same function as the track disclosed in the '787 patent. Even though FATA appeared to have abandoned its claim that its rail system was substantially different in final argument, *see* Tr. VIII, pp. 39-40, the Court will discuss why the differences in structure are insubstantial.

The casting system sold by FATA to Saginaw uses a closed curvilinear pair of rails. The rails are oval in shape with a linear section and a curved section. The rails support the gondolas as they move from station to station. Saginaw also includes an inner set of rails that prevents lateral movement of the gondolas. FATA argues that the inner rails are part of the track structure

and thus there is more than an insubstantial difference between Saginaw and the '787 Patent.

FATA's argument has no merit. The inner rails are not part of the track structure; they do not support the gondolas in any manner. *Cf., Chiuminatta*, 145 F.3d at 1308-09 (indicating that structural details unrelated to the cited function are not what the statute contemplates as structure corresponding to the recited function). Rather than provide a closed loop upon which gondolas ride through the lost foam operating stations, the inner rails prevent lateral movement of the gondola. As Gregory Sanders, a FATA expert, testified at trial on cross-examination:

> Q. Now, all of that [discussion regarding the inner rails] is about the gondola and its interaction to keep it on the track, right?
>
> A. Yes.
>
> Q. Okay. That's not talking about what's supporting the gondola, is it? What's supporting the gondola is two tracks, right? What's support this one is two tracks?
>
> A. Yes.
>
> Q. Right, same thing, two tracks supporting the gondola?
>
> A. Yes.
>
> Q. And these two tracks in both instances form a closed loop all the way around, don't they?
>
> A. Yes, they do.

Sanders, Tr. III, pp. 104-05. Accordingly, the Court finds that the Saginaw system has the same structure as the track means of Claim 1 of the '787 patent.

Alternatively, even if the inner rails are considered part of the structure, they represent an insubstantial difference because they add nothing of significance to the FATA system. Contrary to FATA's assertion, the inner set of rails do not prevent the use of a vertical compactor. The Court gives great weight to all of McMellon's testimony, including the following on direct:

> Q. Mr. Young [FATA's counsel] raised the question of whether you could use a vertical compactor with this type of a track arrangement [that has the inner set of rails].
>
> A. Absolutely.
>
> Q. You can?
>
> A. Certainly.
>
> Q. How can you do that?
>
> A. It comes up between the rails the same as it does on the patented system. I could give that to one of the guys in my shop and they would have a vertical compactor on it in one day.

McMellon Tr. I, p. 138-39.

The Claim 1 structure is interchangeable with FATA's structure. There is no evidence FATA experimented with its rail system or did any more than take the existing rail system from systems previously delivered to its customers. Known interchangeability may be indicated by a lack of evidence that the alleged infringer conducted independent experimentation with respect to the accused structure. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17,

36 (1997). Moreover, there is no evidence that suggests in any way the inner rails played a role in the determination at Saginaw to choose FATA over Vulcan.

C. Registration Means

Limitation 8 of Claim 1, the registration means, properly construed calls for structure on the gondola corresponding with structure on the flask for proper alignment with the compaction station and allows for the posts and receptacles to be located on the gondola or on the flask.[10] If the flask is properly registered on the gondola, it will come into proper alignment with the compaction station. FATA does not dispute that its registration structure performs the same function as the corresponding structure in the '787 patent.

The corresponding structure in the '787 patent is a receptacle on the gondola to receive two posts on the flask.[11] The Saginaw registration structure is a pair of posts located on each gondola that mate with receptacles located on each flask. The posts assure proper location of the flask for alignment with the compaction station. The differences in registration are displayed in Px215 and Px216. FATA argues that the differences in structure are more than insubstantial.

The Court disagrees with FATA. The placement of the posts on the gondola rather than the flask is an insubstantial difference. It does not matter from a mechanical

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10. FATA has persistently argued that a vertical compactor is part of the structure of the registration means and that the manner of engagement between the flask and the compactor is also part of the registration means. The Court in construing this limitation decided to the contrary.

11. The posts have also been referred to as pins during the course of the proceedings.

or engineering standpoint whether the posts or receptacles are located on the gondola or flask. Harry Littleton, an expert in the art of lost foam casting, testified that "pin and socket registration is well known, anyone of ordinary skill in the art would know to interchange the male and female parts to get the same function and results." Littleton, Tr. II, p. 93. Giorgio Donini, general manager of FATA, admitted that it made no difference whether the posts were on the gondola or on the flask. *See* Donini, Tr. III, p. 43. Donald Wood, FATA's patent law expert, has testified that it makes no difference in the infringement analysis whether the posts are on the gondola or on the flask. *See* Wood, Tr. VI, pp. 54-55.

The Claim 1 structure and the structure at Saginaw are interchangeable. *See, e.g.*, Sanders Tr. III, p. 119. There is no evidence that FATA experimented with flask and gondola configurations or did any more than take existing gondolas and flasks used in its lost foam casting systems in production or previously sold. *See Warner-Jenkinson*, 520 U.S. at 36; *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 609 (1950) (denoting that a difference in structure is insubstantial where those of ordinary skill in the art knew the accused structure was interchangeable with the structure described in the patent) (cited in *Chiuminatta*, 145 F.3d at 1309-10). Moreover, there is no evidence that the manner of registration of the flask and gondola played a role in the determination at Saginaw to choose FATA over Vulcan. The placement of the posts on the gondola rather than the flask adds nothing of significance to the accused device.

At most, the difference in flask and gondola configurations may be a slight improvement because flasks with receptacles are easier to store than flasks with posts. FATA, however, cannot avoid infringement based on this insubstantial change that adds nothing of significance. *See Valmont Indus., Inc. v. Reinke Mfg. Co.*, 983 F.2d 1039, 1043 (Fed. Cir. 1993)

("In the context of § 112 . . . an equivalent results from an insubstantial change which adds nothing of significance to the structure, material, or acts disclosed in the patent specification.").

The location of the posts and receptacles is an insubstantial difference. Regardless of the location, the posts and receptacles on the accused device perform the same function in the same way to achieve the same result as that performed by the corresponding structure in the '787 patent. *See Odetics*, __ F.3d at __, 1999 WL 455530, at *5.

D. Drive Means

FATA principally focused on the differences between its driver and the drive means, Limitation 10 of Claim 1.

1. The '787 Patent

The drive means, Limitation 10, reads as follows:

> Drive means for effecting intermittent movement of the mold carriers between indexed positions along the track means.

The Court construed this to mean:

> A hydraulically driven carriage or Geneva movement to engage one gondola and move the entire continuous train of gondolas about the track and stop the train with the gondolas in the operating stations with stops and movement responsive to a controller.

Corrected Order on Claim Construction, p. 3-4.

The Court found the corresponding structure as a hydraulically driven carriage, or Geneva movement, with a latch, a stop, a plurality of limit switches and a programmable controller. In the patent specifications,[12] the driver is essentially a hydraulically driven carriage that carries a latch member pivotally mounted such that it can engage the gondola at the surface formed by the clevis junction of one gondola to another to urge the train of gondolas forward when the hydraulic cylinder extends. When the drive carriage is returned to its initial position, the latch member pivots about

12. The Court found the corresponding structure in the specification as:

> The clevis-like members 38 of the gondolas 19 are more than mere connections between the gondolas. They are also the point at which force is applied by the driver 21 to move the train of gondolas about the track 11. The driver 21 is shown in Figure 6 as a hydraulically driven carriage 42 which moves parallel to the linear track section as shown in Figure 2. . . . In the illustrated embodiment, the carriage carries a latch member 43 which is pivotally mounted and biased for movement about a horizontal axis parallel to the track 11 and has the rear portion thereof beveled. As the latch 43 is retracted, the beveled rear portion engages the clevis-like member of the next gondola 39 and acts like a cam surface to pivot the latch 43 outwardly as the carriage 43 returns to its initial position. A shock-absorbing stop 45 is provided forwardly of the driver to ensure that the train stops at the proper position by engaging the gondola at the end of one increment of travel. . . . A plurality of limit switches 47 are mounted on the driver 21 and the stop 45 to generate signals indicative of the carriage position and the stop position, as well as the speed of the carriage 42. . . . The aforementioned limit switches 47 and 58 all provide signals to a controller 61 which may be a programmable microprocessor.

See also Figures 2 and 6 of the '787 patent.

a horizontal axis to pass by the next engagement clevis that will be engaged on the next cylinder stroke. A stop, or shock absorber, is pivotally mounted at the end of the cylinder stroke to engage the clevis and insure that the train of gondolas stops at the proper position. The stop pivots about a horizontal axis out of the way of the clevis during the first part of each drive cylinder stroke. Limit switches are located at the beginning and end of the cylinder stroke. The switches send a signal to the programmable controller, which actuates the drive cylinder and coordinates the actions of the system components.

2. Saginaw

The drive system for the system FATA sold Saginaw was designed by FATA in 1977. Dal Pan testified:

> Q. [Y]ou used a driver that basically relied on your old concepts that you knew was tried and true and proven?
>
> A. Yes sir.

Dal Pan, Tr. VI, p. 112.

In particular, Saginaw uses a hydraulically driven carriage mounted beneath the straight section of the track. The hydraulic cylinder is controlled by a microprocessor. The carriage carries a pair of levers or latches that are pivotally mounted for selective movement about a horizontal access perpendicular to the track. A drive block is affixed beneath each trolley such that one of the levers pivots about the horizontal axis to engage the block and push the train. The other pivotally mounted lever engages the block to bring the trolley to a stop at the end of the indexing stroke. Both must retract to permit the carriage to return to the initial

position. A secondary clamping mechanism provides fine adjustment along the length of the track if needed, although its primary function is securing. The secondary clamp appears to have no discernible effect on the trolley in action.

3. Comparison

The two structures are essentially the same; the differences are insubstantial. The accused system has a hydraulically driven carriage, a latch for pushing the train of gondolas, a stop for ending the forward motion, a plurality of limit switches to signal the position of the cylinder, and a programmable controller that actuates the drive cylinder and coordinates the actions of the system components. Vulcan's Proposed Finding of Fact 112 best compares the elements of each as follows:

Comparison of Features

Corresponding Structure	*FATA Device*
(1) Hydraulic cylinder	(1) Hydraulic cylinder
(2) Carriage at end of cylinder	(2) Carriage at end of cylinder
(3) Pivoting latch or lever to engage the gondola	(3) Pivoting lever to engage the gondola (back lever of gripper)
(4) A pivoting stop shock-absorbing stop or lever	(4) A pivoting stop (front lever of gripper)
(5) Plurality of limit switches	(5) Plurality of limit switches
(6) Programmable controller	(6) Programmable controller

Although features of FATA's drive mechanism look different from the corresponding structure because FATA uses a gripper with a front and back lever instead of a separate latch and stop, the gripper is an insubstantial difference from a latch and stop. FATA's gripper rides on the carriage at the end of a hydraulic cylinder. The back lever of the gripper engages a gondola. *See* Dal Pan, Tr. VI, pp. 115-16; Patz, Tr. VII, pp. 39-40. When the hydraulic cylinder extends, the back lever pushes the entire train of gondolas forward. *See* Littleton, Tr. II, pp. 95-96; Dal Pan, Tr. VI, pp. 115-16; Sanders, Tr. III, p. 130. At the end of the cylinder stroke, the front lever of the gripper acts as a stop, and stops the forward movement of the gondolas. *See* Littleton, Tr. II, p. 96; Dal Pan, Tr. VI, pp. 115-116; Sanders, Tr. III, pp. 124-26. Before the hydraulic cylinder retracts, both levers of the FATA gripper open by pivoting about a horizontal axis to get out of the way of the gondola. To engage the next gondola, the levers of the gripper close by pivoting about a horizontal axis. *See* Dal Pan, Tr. VI, pp. 122-24. The fact that FATA's gripper device allows the train of gondolas to be reversed does not relate to the function claimed in Limitation 10 of Claim 1. This is simply an additional function that FATA's drive structure can perform.

The FATA drive mechanism also has limit switches at the beginning and end of the cylinder stroke that send signals to a programmable controller that actuates the drive cylinder and coordinates the actions of the system components. *See* Dal Pan, Tr. VI, pp. 126-27; Dal Pan, Dep., pp. 87-88; Px 180, 181; Patz, Tr. VII, p. 40.

On June 29, 1987, it was well known by those of ordinary skill in the art that the FATA gripper mechanism was readily interchangeable with the latch and stop disclosed in the corresponding structure. Indeed, Vulcan has used a gripper on a number of occasions prior to FATA building its system.

The Court finds the testimony of McMellon and Littleton credible and extremely persuasive in this regard. McMellon testified:

> It is designer's choice whether to use the type of latch and stop described in the patent or the gripper device used by FATA.
>
> The gripper used by FATA has been commercially available well before June 29, 1987. It was well-known by those knowledgeable of conveyors that a gripper could be substituted for the latch and stop described in the patent. The two are completely interchangeable. It makes no difference to the invention which device is used. The invention will work the same.
>
> The latch and stop described in the patent were used because they are simpler than a gripper. However, use of a gripper is an insubstantial change from the latch and stop described in the patent. Both perform the same function in substantially the same way and achieve identical results. In fact, Vulcan used a gripper at the end of a hydraulic cylinder at Saturn in place of the latch and stop because the Saturn line were heavier systems.

McMellon, Tr. I, p. 134. Littleton testified:

> The gripper arrangement presents merely an insubstantial difference between the camming latch and the action used in the '787 patent. Both the latch and stop as described in the patent specification and the gripper mechanisms are well known in the art and readily interchangeable. In fact, Vulcan has used a gripper mounted on its

> drive carriers to move the train for a number of years. I have observed the Vulcan gripper mechanism at Vulcan's installation at Saturn. Both of these engagement mechanisms perform the same function in the same way and achieve the same results; that is, to engage the gondola or trolley and move the entire train of gondolas about the track and stop the train with the gondola in the operating positions — stations. The two engagement mechanisms which are two of many similar mechanisms which could have been used to perform the same function, and they are interchangeable.

Littleton, Tr. II, pp. 97-98.

Further, the fact that the FATA drive mechanism is located between the track, rather than on the side of the track, is irrelevant to an infringement analysis because both push along the pivot axis of the respective gondola connection. Thus, the location of the drive mechanism does not affect its function. See Sanders, Tr. III, pp. 120-21.

4. Conclusion

The two drivers are interchangeable. There is no evidence of experimentation by FATA. FATA utilized an existing driver system. There was no evidence that in any way the differences in the driver systems played a role in the determination at Saginaw to choose FATA over Vulcan. The differences are insubstantial.

VII. CONCLUSION

FATA copied Saturn in supplying Saginaw. Saturn's lost foam casting system was manufactured by Vulcan, and Saturn was covered by the '787 patent. It is interconnected continuously-linked lost foam casting system meeting the limitations of Claim 1 of the '787 patent. The asserted differences in the structures of the three means-plus-function limitations in Claim 1 are at best insubstantial. FATA infringes Claim 1 of the '787 patent.

This case will now go forward with a trial on willfulness and appropriate relief. The deputy clerk will set the date after consultation with the parties. The trial on willfulness and damages and/or injunctive relief should take far less preparation and far less time than the trial on infringement because it appears that most of the facts can be stipulated.

As to the question of interim injunctive relief, the parties should discuss the matter first and then Vulcan can, if necessary, move for such relief. As to an accounting for damages, most, if not all, of the relevant facts can likely be stipulated.

s/ Avern Cohn
AVERN COHN
UNITED STATES DISTRICT JUDGE

DATED: AUG 10 1999
Detroit, Michigan